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THE METRIC SYSTEM IN CONGRESS.

Now that the House Committee in charge of the bill to substitute the metric system in place of our present system of weights and measures has decided to make a favorable report, the chances of our having to think and talk in terms of meters and kilogrammes become very real. The arguments in favor of the metric system are so many, so reasonable and so well known, that it is not necessary to reiterate them now. Apart from the saving of time and labor among ourselves, there is the commercial advantage which will be gained by abolishing a system of weights and measures that seriously hampers us in our trade with almost all the foreign nations, and particularly with the Latin-American republics. The English-speaking races stand alone in the use of the old and largely discredited system; and although these races are far in the lead in manufacture and commerce and have the power, if they wish, to perpetuate for many a decade to come, a confessedly clumsy and antiquated system, every argument of utility and convenience calls for the substitution of a decimal system which, by long use, has proved its all around superiority. It is scarcely likely, however, that such a change will be made during the present Congress, and the probability of the bill becoming a law would be greatly increased if the other great branch of the English speaking race could be induced to make the change simultaneously with this country. The agitation in favor of the metric system is as strong, possibly stronger, in Great Britain than it is here, and in view of the close trade relations, and the enormous volume of business between the two countries, it is well worth considering whether an attempt at concerted, or rather simultaneous, adoption of the metric system would not be advisable.—Scientific American.

(The Hartford Steam Boiler Inspection and Insurance Co. publishes a little book which tells all about the metric system, and the price is \$1.25.)

DUAL SUPERVISION—FATAL TO EFFICIENCY.

In the report of the Chief Engineer to the Dominion Minister of Marine and Fisheries he states: In that part of the river St. Lawrence, between Kingston and Montreal, which is in alternate stretches of river navigation and of canals, the maintenance of aids to navigation is under divided control, the Marine Department maintaining some of the lights and buoys, and the Department of Railways and Canals maintaining others. It is evident, he says, that such division of control is fatal to efficiency, and I think that if the Department of Railways and Canals intend to continue the maintenance of the lights and gas buoys which they established last year, it would be well for them to take over also the maintenance of at least the spar buoys now kept by us under contract. I am satisfied that with the importance of the 14 foot channel, the contract system of maintenance is no longer suitable for these buoys. I understand the Railway and Canals Department have built a steam tender for the maintenance of the new gas buoys. They would, therefore, be in a better position to maintain the whole service efficiently than this department now is. If this department undertakes this service, a steam buoy tender and the services of a buoy engineer will be required, the same as in the river between Quebec and Montreal.

He further states in his annual report: I would again draw your attention to the increased efficiency that would result from the maintenance of a serviceable light-house and buoy steamer on the upper lakes. With the rapid increase of steam traffic in these waters and the development of industries at all Canadian lake ports the necessity for this change in our system becomes yearly more urgent.

CANADA'S CUP.

The Chicago Yacht Club is making making great preparations for the coming international race for the Canada's cup to be sailed in August of this year.

At its last meeting, it was ascertained that the membership of the club had doubled during the last month, and that contracts had been let for the new club house on the lake front and preparations had been made for laying out the courses for the club's trial races.

It was ascertained that in addition to the Illinois now being built under designs by Crowninshield, another defender from designs by Capt. Charles Davis who sailed the victorious Genesee in the last regatta is being built at a yard on Lake Michigan. Two other boats are also under construction for syndicates of club members, and a defender is also being designed for yachtsmen of the Detroit Boat Club under the direction of Commodore Shaw. It is, therefore, hoped that there will be at least six defenders to go into the trial races in July.

Commodore F. H. Osborne of the Columbia Yacht Club at Chicago is making preparations to keep open house and do his share and have the Columbia Yacht Club assist in entertaining the visiting yachtsmen, both Canadian and American.

ANOTHER POLAR EXPEDITION.

Four portable houses, two steam launches, a complete photographic apparatus, 50 tons of dog food—this comprises the list of supplies which Evelyn B. Baldwin, Arctic explorer and meteorologist, expects to purchase in Philadelphia for the use of the Baldwin-Zeigler polar expedition.

Everything points to the middle of June as the date of sailing from New York. The America is the permanent expedition ship and will carry 30 men in her crew. Mr. Baldwin stated, while in Philadelphia last week, the route to be as follows: We shall go around the North Cape, Norway, to some point in Russia, from which we shall strike northward, past Nova Zembla to Franz Josef Land. Here the two vessels will part company. The America will continue northward and the members of the expedition will struggle to attain the north pole by ice, land or sea. We will carry provisions for two years.

APPARATUS FOR THE INSPECTION OF BOILER TUBES.

An account is given in Foreign Abstracts, British Institution of Civil Engineers, of an apparatus, the invention of the author and M. Vinsonneau, for the examination of boiler tubes. By reference to diagrams the construction and use of the apparatus are explained. It consists of a tube fixed at right angles in a chamber provided with a magnifying eye-piece. At the further end of the inspection tube, which is capable of being drawn out to suit the length of the boiler tube under examination, is an incandescent electric lamp, and an angular plane reflector which transmits the rays to a reflector inclined at a similar angle under the eye-piece. The tube in process of inspection is fixed in a traveling carrier, which permits every part of it to be examined in turn. The carrier is provided for this purpose with both a horizontal and a rotary movement. The present apparatus is designed for tubes of 6.56 ft. in length by 1½ in. in diameter, but the same principle can be applied to tubes of larger size and greater length. An apparatus for use in the case of tubes in situ has also been devised, and, by reference to a diagram, a method of employing the apparatus for the examination of the exterior surfaces of tubes is explained. It is stated that this invention has proved very satisfactory in use, and that it has often revealed defects in the interior of tubes which externally presented every appearance of soundness.

IN FAVOR OF CANADIAN PORTS.

The Canadian Manufacturers' Association has taken up the question of Canadian rail and seaport terminals and proposes to use its influence in favor of Canadian ports. At a meeting of the executive of the association, Mr. W. K. McNaught, a prominent manufacturer, gave notice of a motion to urge upon the government the amendment of the preferential tariff so that only British goods imported direct from the mother country to a Canadian seaport should have the benefit of the 33½ preferential.

This measure, if put into force, would divert a great volume of Ontario imports which are now entered at New York, Boston and Portland, to Montreal in summer, and Halifax and St. John in winter. Mr. McNaught says the double-tracking of the Intercolonial would be one of the first results of his suggested change in the tariff.

TO ABSORB THE OUTFLOW FROM LAKE SUPERIOR.

"In five years," says Mr. Clergue, manager of the Lake Superior Power Co., "we will be running through fish trains from Hudson Bay to Chicago. In five years, too, the company will have absorbed all the outflow of Lake Superior, except what was needed for vessels. One canal to give 20,000 horse-power is now in operation, another to give 50,000 horse-power is almost completed, on the Michigan side of the river. Of the total power, 40,000 horse-power has been leased for a long term of years, to the Union Carbide Co., and the United Alkali Co. The former is now using a great power at Niagara, for the manufacture of carbide of calcium. The Sault power will cost it, perhaps, a third of what it pays to Niagara, and yet the development concern will, in twenty-five years get back all the original cost, as well as an annual interest. Some 10,000 horse-power on the Michigan side, will be used in the reduction of copper from that state, and for other natural uses. A few weeks ago, work was begun on the Canadian side of the river, on a second canal, that is to develop 40,000 horse-power more. It is estimated that this will take all the power of the river. The Michigan canal is to be furnished with 320 turbine wheels, each four harnessed to one great single-phase dynamo, the whole to generate 50,000 horse-power. The contracts for wheels and generators have been made, and the canal is being pushed with 1,000 men, and all the steam and compressed air appliances that can be assembled. It is a cutting two and a half miles long, two hundred feet wide and twenty-two feet deep, through the heart of the city, and much of it in solid rock. The sides are cut by air channelers from the solid rock ledge, and the waste material is used in erecting the great buildings. There will be a power house 1,380 feet long, 100 feet wide and 106 feet high. This canal and power plant will have cost, when done, \$2,750,000. The second Canadian canal will cost nearly as much.

NEW TRANSPORTATION ROUTE.

In the report of the Dominion Department of Public Works reference is made by the deputy minister to the survey of the stretch of the French river between Georgian Bay and Lake Nipissing, a distance of 50 miles. "Already," it says, "a cursory survey has been made, and enough information has been obtained to show that the scheme is a feasible one, and that in its execution no insurmountable difficulties will be encountered. It has been considered that the opening of a new route for transportation, with the ultimate terminus at Montreal, and the additional advantages of receipts of other Canadian transportation routes would be advisable. This new one would be principally fed out of what at the present, goes through American channels.



BUFFALO.

Special Correspondence to the Marine Record.

Capt. Barton Atkins, died on Saturday evening at his home in Buffalo after a lingering illness resulting from an attack of grip, aged 74 years, he was a pioneer in the Lake Superior trade and country.

The Roberts Boiler Co., of Red Bank, N. J., will forward one of their patent water tube steam generators to the David Bell Engine Works, to be placed in the 75-foot iron tug to be constructed at the Bell works for Henry Dunbar, who has the dredging contract at Albany, where the new boat will be used in June.

Captain Patrick Hart died at Oswego on Saturday, aged sixty years. He had been a life-long resident of that city, and was a well-known tugman. He was in the Rustler last season at Ogdensburg. For several years he worked with his tug in the Welland canal, and also at Chicago. He is survived by a widow and two sons, Captain Morgan Hart, of Buffalo, and Captain Lawrence Hart, of Oswego.

Minneapolis, St. Paul & Buffalo Steamship Co., J. C. MacLay, General Agent, Soo Line, Buffalo.—The following appointments of masters and engineers to the steamers of this line have been made for the coming season: Str. Minneapolis, Capt. George Moore, master; D. J. McMillen, eng. St. Paul, Capt. Peter Thompson, master; Henry Stone, eng. Huron, Capt. W. Moore, master; Clinton Folkerts, eng. John Pridgeon, Jr., Capt. D. N. Sherwood, master; John Mogan, eng. Hennepin, Capt. C. D. Ross, master; Samuel Moore, eng.

Montreal is getting a little uneasy about the new elevators and Mr. James Crathern stated on Monday that if the Conners syndicate could not go ahead with the building and improvements, he could find some one that was able to do so. The members of the Montreal Harbor Board are to start out to solve the winter ice-breaking problem in the St. Lawrence river. At the meeting the board held on Monday last the commissioners resolved to visit the ice-breaking boats which are used in the neck of water lying between Lakes Huron and Michigan each winter. The commissioners, together with Mr. John Kennedy, the chief engineer of the board, will leave Montreal on Tuesday, the 26th, for the Straits of Mackinac.

It appears to be a fact that the owners of the old steamer Northern, which has been in court ever since she burned at L'Anse in December 1892, did not get much out of their policies after all. Several years ago a suit against the Western of Toronto was won by the owners, who sued to recover on their fire policies. The company appealed and all the others stood out. A decision more favorable to the company was obtained later, and now the owners have settled the case out of court, getting, it is claimed, hardly more than the interest on the \$45,000 in dispute. This is a substantial victory for the companies. The owners were represented by E. C. Maytham and John Kelderhouse who were part owners also.

The package freight lines are beginning to set preliminary stakes for next season's business, but so far no change is contemplated. Nothing can be done conclusively till the flour rate is fixed by the all-rail lines. The indications of a good living rate are none of the best just now, and the managers, such of them as are now on the spot, are not feeling too joyful over the situation. There is no change in the equipment of the lines beyond the addition of the three new steamers now in course of construction. It is not thought that there will be any change in the management of the lines. At present Manager Douglas, of the New York Central line, Manager Evans, of the Pennsylvania, and Manager French, of the Union Transit line, are in southern California, and Mr. Myer, of the latter line, is in Bermuda.

THE Northern Grain Company has loaded every available vessel in Manitowoc, Wis., and will have nearly 2,000,000 bushels of grain in vessel storage by the close of March. The boats receive one cent a bushel storage and the going rate to Buffalo in the spring. The Flint & Pere Marquette steamers make daily trips across the lake all winter to Ludington, carrying grain, thus relieving the pressure on the Manitowoc elevators.

WM. POLSON, who died in Toronto Jan. 7, was born in Montreal in 1834. From an early age he exhibited great aptitude for mechanics and became a skilled mechanical engineer. He was appointed Mechanical Superintendent of the Cobourg, Peterboro' & Marmora Ry. at Cobourg, a position which he relinquished to accept a similar post on the Grand Junction Ry. at Belleville. In 1883 he severed his connection with the railway, and has since been superintendent of the Polson Iron Works at Toronto, of which his only surviving son, F. B. Polson, is one of the proprietors.

DETROIT.

Special Correspondence to the Marine Record.

The Michigan Retail Lumber Dealers' Association held their annual session here last week.

The Detroit & Buffalo Steamboat Co., Detroit, has filed articles of incorporation with the Secretary of State at Lansing, capital stock \$650,000.

The company which will operate the two big passenger steamers between Detroit and Buffalo will be known as the Detroit and Buffalo Steamboat Co.

The Cleveland Cliffs Iron Co., Cleveland, has bought the wooden steamer Kate Buttiron from Mrs. Kate Norton of Marine City, Mich. The Buttiron has gangways and will be used by her new owners for carrying pig iron. She was built in 1881 and is 174 feet keel and 31 feet beam.

Capt. George A. Symes, who has been in the employ of the Cleveland Cliffs Co., for the past five years as master of their steamers Cadillac and Pontiac, is to take up a real estate, loan and insurance business in Detroit with George E. Kingsley. The firm will be Kingsley & Symes, with offices in the Bamlet building.

The Minnesota Steamship Co. has libeled the Lehigh Valley steamer Wilbur for crushing in the bow of the barge Martha opposite Grosse Point last fall. The Troy, it is charged, was racing with the Wilbur at the time, and she is brought into the case. The same attorneys which have fought the Fontana case will handle the Martha collision. Harvey D. Goulder, Esq., for the Troy, J. C. Shaw, Esq., for the Wilbur, and H. A. Kelley, Esq., for the libellant.

Capt. John Finley, an old lake sailor and a resident of Detroit for twenty five years, died early Monday morning after an illness of but two days. He was at work at the shipyards until Thursday night. He had complained of pains in the chest, from which he had been a sufferer since falling from the cross-trees of a boat two years ago. He became very ill Friday and the malady was discovered to be appendicitis. He was fifty-two years old and had sailed the lakes since he was a young man.

The members of the Licensed Tugmen's Protective Association No. 22 held their meeting Saturday night in Bay City. A number of candidates were initiated and a new schedule of wages voted upon. The wages on all river tugs were set at ninety dollars for captains and eighty dollars per month for engineers. All large fish tugs ninety dollars and small fish tugs eighty dollars per month and board themselves. The charter of this organization will close March 16, 1901, but it is expected that all the local tugmen will join before that time.

T. N. Fordyce, of this city has secured from the state of Ohio a 30 year lease of the Miami and Erie canal from Toledo to Cincinnati, with the privilege of building electric lines on either or both sides of the canal. Arrangements have already been made to construct the line from Dayton to Cincinnati, and work will be commenced as soon as spring opens. The plan is to build an electric railway and tow the canal boats by means of a motor. It is asserted that Mr. Fordyce has already received guarantees of 1,000,000 tons of freight a year between Dayton and Cincinnati, provided the rate is lower than that charged by the railroads.

The case of the St. Clair Steamship Co., against the steamer Appomattox and schooner Santiago for damages resulting from the sinking of the Fontana off Fort Gratiot last summer, which has occupied the attention of Judge Henry H. Swan of the United States District Court here for about three weeks, closed in favor of the Fontana. The amount claimed was \$90,000. The case has been very stubbornly contested, and besides a large number of witnesses the court room was constantly filled with lake captains and others interested in marine matters. At the close of the arguments Judge Swan decided in favor of the owners of the Fontana and against the Santiago. That vessel is not worth the amount of the damages, and it is a question how much can be realized from her.

The matter of a 12 cent differential in favor of this city as against the lower lake ports on lumber brought down from up lake ports is in the hands of a committee, and the Detroit dealers will make their usual hard fight to secure this concession from the lake lumber carriers. For the five years prior to last year they enjoyed the concession, but last year it was cut out. The carriers are making the usual argument that they are always sure of a return load from Lake Erie ports, whereas from Detroit they can never hope for a cargo, and this is true. At the same time the local dealers need the concession if they are to have liberal offers of tonnage for their cargoes. The request of the lumber carriers that the shippers load and unload to and from the hull of the boat is also in a committee's possession, and will be acted upon at this meeting.

Charles "Kid" Wilds, one of the best known yachtsmen on the lakes, will take an active part in the coming races for the Canada's cup, and if so, Detroit may take part in the trial races off Chicago for the purpose of picking a defender of the Canada's cup, now held by the Genesee, a Rochester boat, which sailed under the colors of the Chicago Yacht Club. "Kid" Wilds, who is conceded to be the best sailor in these parts, is working here this winter and has designed a boat for these contests. The boat favored by Wilds is on the lines of the fastest centerboard yachts of nearly a score of years ago. She is a skimming dish, pure and simple, with very light draught, exceeding breadth of beam and an overhang forward and aft which makes her quite a length on a little water line. The Wilds model is now at the office

of Capt. A. I. McLeod, who will probably organize a syndicate for the building of the yacht. "I surely will take hold of it if I can find the time," said Capt. McLeod. "It will require about \$5,000, and my idea is to have one-hundred citizens interested so as to make it a popular affair. I have much confidence in the ideas of Capt. Wilds and would like to see Detroit represented in the trials." A year and a half ago Wilds came up from Toledo with the Juniata, carrying but two sails, and won the D. V. C. sweep-stakes. He designed this yacht and has had considerable to say about several others which have won their laurels on the lakes in the last decade. It goes without saying that lower lakers swear by "Kid" Wilds but of course he must have the craft to handle to get anything more out of her than anyone else.

Capt. Charles W. Norton, the well-known vessel broker, died at Grace hospital on Monday, after an illness of nearly three months' duration. Mr. Norton was born in Detroit fifty-three years ago. His father, Capt. John Norton, was one of the best known tugmen in this region of the lakes. Charles passed through the Detroit schools, graduating from the high school, and later learning telegraphy in the offices of the D. & M. railroad. Unusually apt with the brush and pencil, young Norton became a marine artist, and during his younger days made many fine pictures, which are preserved as mementoes of the days when sailing vessels were supreme in these waters. Later he established an office as a marine reporter, and in addition to reporting for the Detroit papers, was a correspondent for a number of dailies around the lakes. Thirty years ago he established himself as a shipping agent among the vesselmen, and there are probably few men now in the vessel business who have not had a close acquaintance with "Charlie" Norton, the "biggest vessel owner on the lakes." Mr. Norton gained this title, not through the ownership of the largest fleet in service, but because he owned the schooner Monguagon, and his weight of 285 pounds entitled him to the sobriquet. The announcement of Mr. Norton's death on 'change, while not unexpected, brought a great many expressions of sadness from the bulls and bears, whose associate he had been for many years. He was not a member of the board of trade, but his close connection with the organization for such a long time made him appear like one of them. A special session was called by President Wm. Carson on Tuesday and a committee appointed to put into proper form an expression of the board's sense of loss. Thos. G. Craig, Jas. T. Shaw and Frank T. Caughey compose the committee and their work will be brought before the board for approval Wednesday. The members will adjourn and attend the funeral in a body. The funeral will take place on Wednesday afternoon.

CHICAGO.

Special Correspondence to The Marine Record.

It has been reported that Capt. Wm. Nicholson, Grand Rapids, would take charge of the steamer Mary Boyce. Capt. Nicholson says that he understands Capt. Tower has been appointed master of her.

Burger & Burger, shipbuilders, have been awarded the contracts for the building of two large tugs, one for Kenosha parties and the other for Chicago. Work will begin at once as the delivery must be made in early summer.

The steel tug S. M. Fischer, and car carrying barges Nos. 1 and 2, owned by the Lake Michigan Car ferry Transportation Co., are being repaired in South Chicago. The insurance, amounting to \$55,000 on the two barges which sank last fall, has been paid.

The will of the late Capt. James S. Dunham, filed in the probate court Monday, distributes an estate of \$200,000 among the members of the family and the near relatives of the deceased. Liberal provisions are made for the widow, Mary E. Dunham, and for a son and two daughters of the testator.

Regrets are heard here among the oldest class of vesselmen on the death of "Charley" Norton of Detroit. A vesselmaster who was in his company a couple of seasons ago thought that Charles Norton was good for another twenty years, as he was a big, robust man, and always carried along with him a cheerful, genial bearing and disposition, scores will miss him on their next visit to Detroit.

Several wooden vessels, both loaded and light, have been found in a leaky condition this week. It is reported here that the steamer Henry J. Johnson, moored for the winter in the Starke No. 2 slip, has five feet of water and ice in her hold aft as the result of leakage, the whereabouts of which remains to be determined. The steamer Nebraska, lying in the same slip opposite the Johnson, rests upon the bottom with an outboard list, having filled with water. Slight leakage has developed in the steamer Orinoco, which took on a cargo of oats at one of the Nye-Jenks elevators recently.

Unless the Erie canal is deepened traffic is going to shunt to the St. Lawrence route. The Canadians now have an excellent opportunity to make a shipping port out of Montreal by scooping in all of the old Erie canal trade, as well as the intended volume of new lake trade. With a few ten thousand ton boats always available at the latter port, several of the largest canal cargos can be ferried across the Atlantic in economical style. I don't believe much in the nondescript class of lake, canal and ocean built craft, and think that such vessels would turn out to be a good deal of an abortion. The best idea is to pile products, merchandise, etc., to tide-water, and leave Atlantic drogers to do the rest—all on an expeditious, economical basis though, no detention, prohibitive tolls and charges or high freight rates. A large volume of tonnage and quick dispatch is what's wanted.

CLEVELAND.

Special Correspondence to The Marine Record.

Mr. C. H. Crane, of the firm of Lewis & Crane, Seattle, Wash., dealers in Pacific coast lumber, is now on his way home after an extended business trip throughout the east.

Mr. Peter J. June, last year chief engineer of the steamer Malietoa and one of the best known engineers on the lakes, has accepted a position with the Illinois Steel Co. and will not sail this season.

The Kelley Island Lime & Transport Co. has bought the schooner Fanny Neil from Bigelow Bros. of Chicago. The Neil was built in 1870. She will tow in the stone trade between this port and Kelley's Island.

The same old chestnut about placing the general tonnage of the lakes under one management is being ventilated again for all it is worth. A conservative owner said a day or two ago "no doubt it would be a good thing to lessen the expense of management etc., but it would soon drop to pieces of its own weight."

According to present calculations the third steel steamer built to the order of J. C. Gilchrist, at the Lorain yards of the American Ship Building Co., will be launched on Thursday next, February 28. At present there is a possibility of a few days' detention on account of rather heavy ice. This feature has also delayed repair work more or less, but extra work will be carried on later to make up for lost time.

Representatives of the longshoremen's union from all the lower lake ports held a meeting at Ashtabula on Monday, and as a result it is reported that no increase in wages or overtime allowance will be asked for the coming season. It is understood, however, the union will demand a 10-hour instead of a 12-hour day. The matter, it is said, will be presented to the dock managers at their meeting in Cleveland early in March.

The funeral of Capt. Millard was held last week at Lorain, only the relatives and a few friends being present as it was deemed advisable to have the service private. Rev. Painter conducted the ceremony. The pall bearers were six brother captains, T. Wilford, R. J. Lyons, J. F. Bowen, Steve Ketchum, Alex. Porter, John Babbitt. Members of the Tug Association, Cleveland, were present. Burial was at Elmwood.

Howard Saunders, assistant superintendent of the old Globe yards of the American Ship Building Co., has resigned his position to take a similar position with the New York Ship Building Co. at Camden, N. J. The latter firm has been incorporated a little over a year and it is considered one of the finest and best equipped yards in the world. Mr. Saunders has been connected with the old Globe yards for the past twenty years.

Having visited Montreal and New York upon business J. C. Wallace, general manager of the American Ship Building Co., returned home a few days ago. It was supposed when Mr. Wallace went to Montreal that it was for the purpose of selecting a place where a temporary yard might be erected, at which the ships to be built here in sections for the ocean-going trade might be completed. He said that no arrangements had yet been made in that direction.

During July and August the Cleveland and Buffalo steamboat line will run three boats between Cleveland and Buffalo for Pan-American Exposition travel. There will be day and night service between Cleveland and Buffalo with a day rate of \$1.50 and a night rate of \$2.50. On Tuesday, Thursday and Saturday nights there will be a second night boat. The Detroit and Cleveland Navigation Co. during July and August will have both day and night service between Detroit and Cleveland, making connections with the Buffalo boats.

Several transfers of small, old and wooden bottoms within the week count for nothing as vessel property is held now. Of course, the five million dollar deal in the transfer of the fleet built by the principal officers of the American Steel & Wire Co. cuts no figure, as the property is simply turned over for the company to handle and will be kept in the same trade, etc. Minor stockholders in the company kicked though at the transfer, as their attorney stated that they had to pay five millions for what only cost three millions; however, the growl amounted to nothing as the fleet could not be duplicated now for a good deal more than the price that it was turned to the company, for John W. Gates and his colleagues went ahead and built a fleet of 8,000 tonners. Now they turn the craft over at elegantly profitable figures to the company, taking a note of hypothecation on the earnings of the fleet for their security on the purchase price, so that it's charming all round.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

Capt. Atkins, one of the early settlers in Duluth, died in Buffalo last week, aged 74 years. His old residence of a quarter of a century ago is still standing.

The weather indications, as well as the opinions of lake men here, lean towards a not too early opening of navigation. The usual guesses are flying around, but it is safe to say that vessels will begin to arrive at about the same time as other seasons.

It is quite a serious question whether the United States fishery commissioners are doing their duty on this lake or otherwise. It is quite certain that white fish and trout are getting scarcer each season in spite of the large outlay of money used to stock the lake, or supposed to do so.

Capt. David Gaillard, Corps of Engineers U. S. A., now on duty as assistant to the engineer commissioner of the District of Columbia, has been ordered here as the relief of Major Clinton B. Sears, Corps of Engineers, in charge of the improvement of the harbors of Duluth, Superior, Ashland and Grand Marais and the waterway across Keweenaw point, Lake Superior, and the operation and care of Portage Lake ship canals.

A meeting will be held next week by the longshoremen, chiefly lumber shovers, to arrange season loading rates, delegates are selected and the meeting will be held at Ashland. The scale last year was 60 cents an hour, but it is not thought it will be so high the coming season. The very best feeling exists between the carriers, shippers and longshoremen, and it is thought that mutually amicable terms can be easily arranged.

Word comes from Ashland that one of the largest lumber sales made in this season has been closed. Moore, Kepple & Co. of Port Wing sold the entire cut of their mill for the season 1901 to the Nicola & Stone Lumber Co. and Potter, Teare & Co. of Cleveland. There will be 18,000,000 feet of lumber transferred in this deal—16,500,000 feet of white pine and 1,500,000 of Norway. It will mean an outlay of about \$270,000 on the part of the purchaser. Port Wing is the new little harbor near here and will only accommodate very light draft vessels.

Major Sears was lavishly entertained here last week at a banquet given by the leading citizens, and was later presented with a memento in the form of a magnificent loving cup. The occasion of the grand farewell is given in the following orders issued by the War Department: "Major Clinton B. Sears, C. E., is detailed as a member of the board of officers appointed for the purpose of making a survey, plan, and estimates for the improvement of a harbor at the island of Guam, vice Capt. John Biddle, C. E., relieved as a members of said board. Major Sears will proceed direct to Guam, and upon the completion of his duties as a member of the board will proceed to Manila, P. I. (Feb. 9, H. Q. A.)."

An important transaction in iron lands was completed here this week. The Chemung Iron Co. advanced \$40,000 as royalty on a 40 acre tract. The minimum output for 1901 is to be 50,000 tons and 75,000 tons for 1902. For the succeeding life of the lease the minimum output is 100,000 tons a year. The lease runs for fifty years, and the royalty is 25 cents a ton. Chemung Iron Co. was organized and incorporated recently to own and operate iron properties. The ore deposit is situated about two and one-half miles northeast of Hibbing, and immediately south of the Chisholm property, which was recently taken over by the American Steel & Wire Co. It is undecided when operations will be begun looking toward the development of the Chemung property, but as the lease provides for a minimum of 50,000 tons during the present year, or \$12,500 in royalties, it would appear that early action is contemplated. One of the desirable features of the ore deposited on the Chemung property is the structure of the ore. Its structural qualities are said to be particularly good. The deposit consists of about one-third Bessemer and two-thirds non-Bessemer.

A dispatch from Washington announces that Capt. David Gaillard, at present assistant to the engineer-commissions of the District of Columbia, has been ordered to succeed Major Clinton B. Sears, as engineer in charge of the river and harbor improvements on Lake Superior. Capt. Gaillard was colonel of the Third Regiment, Volunteer Engineers, during the Spanish-American war, and is a South Carolina man. It is not known how soon he will arrive, but it may be several weeks, at least. The office here will first be transferred to Major Daniel Lockwood, of St. Paul, Minn., who will be in charge temporarily, and he in turn will transfer it to Capt. Gaillard. Major Sears will probably leave on his long journey to the Philippines the latter part of next week. A United States transport is to leave San Francisco about March 1, and he will take passage upon her. Another farewell banquet is to be tendered Major Sears, this time by his immediate assistants and others whose duties in the engineering corps have brought them in frequent contact with the engineer in charge. It will be an elaborate affair in every sense. Major Sears has been very popular with all of the government employees, under him, and they regret exceedingly, to see him depart, though all rejoice in the high recognition which has been shown him by the War Department.

A BILL has been introduced in the Indiana Legislature by Senator Agnew, providing for the building of a canal from Lake Michigan to East Chicago to the Calumet River and for the dredging of that river at Hammond. The canal will be about three miles in length and cost \$2,000,000 to \$3,000,000. It will open up for factory and warehouse purposes several thousand acres of land now practically valueless.

THE establishment at Halifax, N. S., of a big steel shipbuilding enterprise is being agitated. The Board of Trade favored giving a bounty of \$2 a ton on every steamer built for the first period of five years, and of \$1 per ton for the next five years. The City Council was willing to grant a subsidy of \$6,000 a year if the proposed shipyards were constructed and an additional subsidy of \$4,000 a year if the establishment include boiler and engine works. The city's subsidy would be for a period of twenty years. The promoters say that the steel shipbuilding works they propose at Halifax will be as large as any in the world. They would build freight and passenger steamers.

FLOTSAM JETSAM AND LAGAN.

The Dominion Government are having a new steel ferry built at Newcastle-on-Tyne, England, to take the place of the old one at the Straits of Canso; this is made necessary by the increasing business on the I. C. R. She will cost \$250,000, and will be of 2,000 horse-power and will be able to carry a locomotive and four cars each trip.

Davis & Son of Kingston, Ont., have commenced to build a new steamer for J. A. Roys, of Cornwall Oil Co., to ply between Cornwall and Massena. She is to be 112 feet long and 21 feet beam, with Clyde boilers and compound engines. She is to be ready in June next. She will be a day excursion boat of a speed of 14 miles per hour.

Friends and admirers of Lieut. Hobson, U. S. N., will present a handsome silver service to him in memory of his exploit in sinking the Merrimac. Each of the six pieces comprising the set has been specially designed and etched with scenes in Lieut. Hobson's hazardous undertaking. Cables, anchors and emblems of the sea are used in the decorations.

Thomas W. Lawson, of Boston, who is having a yacht built to compete for the defence of the America cup, is, like Sir Thomas Lipton, a self-made man. He made his large fortune by speculation, but has an eye for art, and owns a fine collection of pictures. He is, however, best known for the "Lawson Pink," which bloom it cost him \$30,000 to produce.

Mr. J. C. Gilchrist, Cleveland, who has been buying up the best of wooden vessels of the lakes in all cases where he can get prices down to his way of figuring, says he has planned upon paying about \$20 per ton for carrying capacity for the wooden steamers, as against \$42 to \$44 per ton capacity now being paid for steel freight steamers building in lake ship yards.

A report is current in Manitoba that the Canadian Pacific Railway will shortly grant a reduction on grain rates in return for certain concessions on the part of the Manitoba government. It is stated unauthoritatively that the railroad will make a uniform rate on grain of ten cents per hundred to Fort William from any point on the Canadian Pacific in Manitoba.

The experiment of building a seven-masted schooner is to be tried at the yard of John P. Gordon, at Franklin, Frenchman's Bay, during the coming season. She is to be of 335 feet keel, 54 feet beam and 32 feet hold, and will therefore be considerably larger than either the George W. Wells or Eleanor A. Percy, the two six-masters. The former of these is 319.3 feet long and 48½ feet beam, and the latter 323½ feet long and 50 feet beam. The big schooner is to be owned in quarter sections by John P. Gordon, of Franklin; Crabtree & Havey, of North Sullivan; Dunbar Bros., of Sullivan, and Capt. Orlando Foss. The largest sailing vessel afloat is the Potosi, a five-master, owned by a Hamburg firm. She carries 6,200 tons against the 3,062 tons of the Eleanor A. Percy. The same firm have ordered the Geestemunde, a five-masted sailing ship, to be 400 feet long at water-line, 53½ feet beam, 33½ feet in depth, and capable of carrying a cargo of 8,200 tons.

THERE has recently been installed in Liverpool, Nova Scotia, an electric marine railway of a novel character. The electrical equipment was supplied by the Royal Electric Co., of Montreal, and was installed by the Maritime Electric Co., of Halifax, N. S. The equipment consists of a 30-horse power induction motor, the motor shaft being geared to a heavy worm shaft and wheel; the worm wheel shaft carries a pinion wheel which gears into another large wheel, on the shaft of which is placed a large heavy sprocket wheel; over this sprocket wheel the heavy two-inch chain meshes into heavy sprocket teeth. This chain hauls the vessel up on a cradle over a track projecting out into the River Mersey to a distance of 500 feet, on a grade of ½-inch to the foot. The track and cradle are built of heavy pine timbers. On Friday, January 11th, the first vessel was hauled up and lowered down again, all the apparatus and gear working well. It is interesting to note that Liverpool possessed the first marine railway in the Maritime Provinces, the motive power used being horses. It formerly took from 4 to 5 hours to haul up a vessel, whereas the same work is now performed in 20 minutes. The present railway is the first one in America, and probably the first one of its kind in the world operated electrically.

"THE Shipbuilding Industry of the United States and its Relation to the Foreign Trade" is the title of a document just issued by the Treasury Bureau of Statistics. It discusses the economic conditions which surround the present state of shipbuilding industry of this country in both their historical and industrial aspects. According to the document the late shipyards have turned out a volume of tonnage which has enabled them to utilize European methods of reducing cost more generally than is the case on the Atlantic seaboard. The progress on the lakes in productive economies has arisen largely from consolidation of plants, whereby specializing could be more generally developed and uniformity in type of construction introduced. The consolidation of shipbuilding plants with steelmaking establishments seems to be another direction in which economies in productive cost of ships must be realized.

THE February Arena contains an article, "The Merchant Seaman and the Subsidy Bill," by W. Macarthur, editor of the Coast Seamen's Journal, San Francisco.

AMERICAN COMPETITION IN SHIPBUILDING.

At the recent meeting of the American Society of Naval Architects and Engineers, held at New York, Mr. George W. Dickie, of the Union Iron Works, of San Francisco, contributed a paper entitled, "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?"

Mr. Dickie, in the course of his paper, referred especially to the steamer *Saxonia*, which the author considered the embodiment of a higher type of skill in naval architecture than ships where only speed was considered. The *Saxonia* carried 9,000 tons of freight at a speed of $15\frac{1}{2}$ knots and a coal consumption of 145 tons per day. This was due to the size of the ship, and to the engines being of the size required for the speed. In regard to the subject of his paper, there were three factors entering into production: Skill in design, cost of labor, and cost of material. The author continued: "In regard to skill, I have always found it difficult to make any just comparison between the product of one shipbuilder and another, the term meaning different things to different people. Skill in design must in merchant work have the commercial element as a prominent factor, and must embrace both the financial interests of the shipbuilder and the shipowner, and in order to prevent these interests from injuriously affecting the interest of the shipper who entrusts his property on the vessel, and the interests of the underwriter who insures the interests of the shipowner and merchant. Certain societies, representing all the interests involved, hedge the designer about with rules that give him but a very narrow field in which to exercise his skill as a naval architect. Yet narrow as this field is, the progressive shipbuilders of Europe are continually pushing out the barriers, and forcing the recognition by the registration societies of new methods in construction, new properties that experience has shown to be desirable, and new combinations that have transformed, within the past few years, not only the dimensions of the ships built, but the whole method of construction. So that, hampered on every side as the naval architect is, by rules and traditions, his skill has been ever on the alert for the smallest opportunity to push out still farther the barriers set up against him.

In thus stating the obstacles that oppose the exercise of the naval architect's skill in design, I do not set the obstacles down as opposed to progress, but as limitations to the free exercise of the skill in design that many naval architects, and especially those of America, think they possess. When the ambitious young naval architect studies the rules, say of Lloyd's Register of British and Foreign Shipping, his first impression is that those people who make and maintain these rules are opposed to all progress, and imagine that they, and the rules they have made, represent the consummation of all that is possible in shipbuilding. As he gains experience, however, in his work, this first impression of his will be modified." The author commended the methods at Lloyd's, saying that the skill of their experts and the careful study of every proposition, not only protected all parties but insured a steady forward movement consistent with the proper protection of the interests involved. He believed an American register of shipping would be accepted by shipowners and underwriters everywhere, and would be a great help to the American shipbuilder. As the steelmaker became familiar with the special needs of ship construction, he would undertake new sections better adapted to take up the strains and stresses of a ship's structure, and reduce built-up work to a minimum. He thought the American naval architect quite equal to the British. As to cost of labor, he claimed America worked under different conditions as to a large portion of the work. Mr. Dickie proceeded: "The whole steel work of a ship may be said to be done under the piecework system in Britain, the price per unit being fixed for certain shipbuilding districts between the shipbuilders and the unions representing the men. This method has its advantages, as it simplifies the estimating—a certain known portion of the work having a certain fixed value, while a considerable portion of the work with us is done on some piecework system, every yard appears to have its own way of fixing prices with the men. In the British yards, as with us, while practically all the steel work is done under some kind of piece system, yet on inquiry it appears that it is with them very much as it is with us; the number of men on wages on the very work supposed to be done by piece is greater than that of the piece workers, and skill in management is directed to the reduction of the number of men on wages as compared to the number on piecework. From combining what information I have been able to gather, I

find that on an average the steel work of construction costs in the British yards from £3 17s to £4 per ton of material worked. This, I think, we can about equal in labor cost here. But, when it comes to fitting out, including carpenter and joiner work, painting and general finish, where piecework does not cut any figure, the cost, I think, is directly as the wages paid. We employ the same class of men as they do; in fact, our best men come from the British yards, and while in some of our yards we may have some advantage in climate, this does not apply to all, and where we are paying 50 per cent. more wages the cost of labor that is reckoned in wages will be 50 per cent. more here than it is in the British yard. And if half the labor cost for any given ship built in a British yard is paid in wages—and this is very nearly correct—and that half costs 50 per cent. less than the corresponding part in our yards, our total labor cost will be 25 per cent. greater than theirs. This is very nearly correct, as tested by comparisons I have been able to make of actual costs as between our yard and one or two in Britain, when I have been furnished with labor costs.

I am convinced, however, that although we pay higher wages to our office staff of draughtsmen, that part of the work does not cost any more than in the British yards, as we seem to be able to do a like quantity of work with a smaller force. The managing staff in our yards are, I think, paid less than corresponding officers in the large yards there, and they devote much more time to their duties."

Mr. Dickie did not think cost of labor could be equalized by establishing a uniform rate of wages, but rather by fixing a labor value on every part of a ship, and giving to each workman the percentage that his labor bears to the total labor on the piece. Marine engines and boilers, he found, cost less in England than in America, due to the fact that no piecework occurs in their construction, and Americans pay 50 per cent. more wages. In small tools they were better equipped, but not in large ones. He added:

"In a large and prosperous engine works that I visited in England, building a special type of engine, but in all sizes from 10 to 3,000 horse-power, I found that the term erection was not used. Every part of their engines is made to gauge, and when finished from the tools is sent to an expert examiner at a large surface table, with accurate measuring instruments, whose business it is to determine if every operation performed by the tools on that piece has been accurately done; that every hole has been bored properly, that every face is in its proper plane. He signs the workman's card that did the work if it has been done correctly; if not, the work is returned to him for correction, or rejected if it cannot be corrected. Every piece of work has a fixed labor value. Every man gets his regular wages. If the work he produces exceeds in labor value the wages, he is credited with 50 per cent. of the difference. If the labor value of his work is continually less than the wages paid him, he cannot continue to work in that establishment. The pieces thus produced that go to make an engine when brought together are not erected as we do, fitting each piece to its place by file or chisel, as may be, owing to defective tooling; but they are placed in stock ready to be assembled in a few hours on receipt of an order for an engine of the size they represent.

A system to insure correct tooling on every piece entering into the construction of our marine engines would, in my opinion, reduce the cost of erection by one half. Some such system, and making every man a partner, so far as the result of his own labor is concerned, would place us in marine engineering where we are now in the production of land engines."

Under the American method labor cost was 25 per cent. greater on the hull and 50 per cent. greater on the machinery. In regard to the cost of material, the author claimed that since the American steel manufacturer was placing his product in British hands in competition with the home market, it should be possible for the American shipbuilder to get his material as cheap as the British one. Engine and other forgings cost 30 to 50 per cent. more in America than in Europe. On the whole he judged the British builder had 10 per cent. advantage in cost of material and about 15 per cent. on the finished ship.

With new methods in the management of labor, the difference might disappear. He thought some wise legislation should be devised so that the American shipowner could build his ships at American yards, although costing more, until the labor problem was solved as to the question of cost.

In the course of a lengthy discussion on the the paper, Mr. Babcock said he thought that as designers Americans were not lacking. He did not think the advantage claimed

by Mr. Dickie of 10 per cent. in favor of the British builder on material could continue long—but believed in the near future it could just be the other way. As to the cost of labor on steel work, if as stated, it was about the same in both countries, he would call attention to the fact that on the Great Lakes this cost represented 30 per cent. of the total cost of freight carriers, and the cost of labor for other work ran from 7 to 12 per cent. of the total cost. Although wages in America were higher, he thought the men turned out more work and continued to work more steadily with fewer intermissions in the working day, and were less under the control of the unions; it was no uncommon thing in England for a man to lose 30 per cent. of his time.

Mr. Lewis Nixon thought that American yards could not compete with those abroad until they were full of large vessels under construction. In an English shipyard it was the common thing to have every slip filled with a large vessel, all of them being similar and often several of them identical in size and type and in the character of the work required. In American yards the builder would have a battleship in one slip, a tug in another, and a ferry-boat in another; and it was impossible to classify and systematise work as could be done under the more favorable conditions abroad.

PRODUCTS AMERICAN STEEL & WIRE CO.

Whether the consolidation and establishment of large firms into a syndicate is according to the best general economic principles, or with whatever arguments may be advanced for or against such combinations, we have no concern at this moment, suffice it to say, that it now appears as if the welding together of the several interests representing and comprising the American Steel & Wire Co., seems to have redounded to the industrial welfare of many other lines of pursuits.

In this connection, we are in receipt of a pamphlet showing a list of the products of the company at the present time. The list is comprehensive in detail only to the extent necessary to give a fair idea of the vast output of this national industry. Many of the products cannot even be briefly listed, but in this pamphlet is shown enough to indicate the general lines. Where detail is lacking on any point the interested may supply same readily by correspondence with the nearest sales office, of which there is one in each of the prominent cities.

A few years ago correspondence was entered into with the wire rope makers of the country, regarding flexible steel wire rope for towing, hauling and mooring purposes, with the result, that a large quantity of this material had to be imported from England. It is now found from the list of products of the American Steel & Wire Co., that wire rope of every description and quality is placed on the market guaranteed, and this too, from galvanized steel standing rigging to special iron, steel, crucible cast steel, plow steel, special steel ropes of any quality to order, galvanized, bright, coppered or tinned, and in all sizes. In fact, the list shows anything from the raw ore to the most finished products in wire and steel.

PLANS FOR THE NAVAL MILITIA.

The prospect of securing the naval militia as an interesting aggregation in connection with the Pan-American Exposition to be held at Buffalo, appears to be in a fair way of realization. Harry E. Mack Nichol, editor of the Naval Service Gazette, himself a graduate at Annapolis, has been in communication with Maj. Thomas W. Symons of the United States Corps of Engineers, having charge of Buffalo harbor. As a result, Maj. Symons has mapped out places in the chart of the harbor which will be convenient for anchorage of the fleet bringing the members of the naval militia to Buffalo.

The expenses for the trip will be very small, and the Exposition authorities offer many inducements for the assembling of the "citizen tars."

As far as investigation has been made, the Illinois battalion could arrange to use the U. S. S. Michigan as part of the annual cruise, or maybe a chartered vessel; the Toledo contingent could do the same, while the two Michigan battalions could utilize their own practice vessel, the Yantic now at Detroit. The Cleveland organization has the Hawk, and the Rochester division is near enough to Buffalo. The converted gunboat the Aileen, would accommodate the New York branch, the Massachusetts has the Inca, the Pennsylvania the Shearwater, the Virginians the Siren, the Maryland force the Sylvia, and the New Jersey organization the Huntress and Elfrida, while the North Carolina and Louisiana battalions might possible get through the canals with the Hor-net and Stranger.

AMENDED STEAMBOAT RULES AND REGULATIONS.

TREASURY DEPARTMENT,
STEAMBOAT-INSPECTION SERVICE,
OFFICE OF SUPERVISING INSPECTOR GENERAL,

WASHINGTON, D. C., February 7, 1901.

To supervising and local inspectors of steamboats and others:

At the regular annual meeting of the Board of Supervising Inspectors of Steamboats held in the Lenman Building, Washington, D. C., January, 1901, the following-named devices were approved by the Board, and have also received the approval of the Secretary of the Treasury:

Mayo Rescue Lifeboat, presented by the Mayo Lifeboat Co., R. D. Mayo, president, Muskegon, Mich.; Carley Life Float, presented by the Carley Life Float Co., M. T. Whiton, president; life-preserver presented by J. B. Hamilton, Springfield, Mass.

The board, under the authority conferred upon it by section 4429, Revised Statutes, approved coil and pipe boilers presented by the following-named persons and firms, when such boilers are constructed in all their parts of wrought iron, steel, or cast steel, in the manner as provided in the general rules of the Board:

L. Boyer's Sons, New York, N. Y.; Bugbee & Laycock, Chicago, Ill. (Authentic water-tube boiler); Chas. R. Cowley and Howell C. Cooper, Everett, Mass.; (Cowley and Cooper boiler); Henry Ernst, New York, N. Y.; A. C. Evans, Norfolk, Va.; George L. Haman, Detroit, Mich.; Ernest N. Janson, Washington, D. C.; L. A. Langmaid, Bath, Me.; Marine Boiler Works, Chicago, Ill.; F. W. Ofeldt & Sons, Brooklyn, N. Y.; Parker Engine Co., Philadelphia, Pa.; Thomas B. Perkins, Grand Rapids, Mich., and Geo. S. Wolf, West Dover, Ohio.

No person shall receive an original license as engineer or assistant engineer, except for special license on small pleasure steamers of 10 tons and under, and ferryboats, sawmill boats, pile driver, boats exclusively engaged as fishing boats, and other nondescript similar small vessels navigated outside of ports of entry and delivery, who has not served at least three years in the engineer's department of a steam vessel, a portion of which experience must have been obtained within three years preceding the application: * * * Masters of barge consorts on the Great Lakes having had three years' experience as such master and who hold license as first-class pilot, may be examined and licensed as master of steam vessels.

No original license as master of ocean or coastwise steam vessels shall be issued (except as hereinafter provided) to any person who has not had at least three years' experience on seagoing or coastwise steam vessel, one year of such service to have been as chief mate of such vessels; nor shall any person receive an original license as chief mate of ocean or coastwise steam vessel who has not served at least three years in the deck department of such steam vessels, one year of such service to have been as second mate of such vessels. Applicants for license as second mate of ocean or coastwise steam vessels must have had at least three years' experience on such vessels, one year of such service to have been as quartermaster or third mate on such vessels. Applicants for license as third mate of ocean or coastwise steam vessel, must have had at least three years' experience on such vessels as a mariner or quarter-master. It is provided, however, that persons whose experience at sea has been on sail vessels of over 700 gross tons may be licensed on the following conditions, namely:

Master.—Any person who has had five years' experience on such sail vessels, two years of which must have been as master of such sail vessels, may be licensed as master of ocean and coastwise steam vessels.

Chief mate.—Any person who has had five years' experience on such sail vessel, two years of which he has served in the capacity of chief mate, may be licensed as chief mate of ocean and coastwise steam vessels.

Second mate.—Any person who has had three years' experience on such sail vessel, one year of which has been in the capacity of second mate, may be licensed as second mate of ocean and coastwise steam vessels.

Third mate.—Any person who has had three years' experience on sail vessels as mariner may be licensed as third mate of ocean and coastwise steam vessels.

It shall be the duty of all inspectors before granting an original license or renewing an existing one to a master or pilot of steam vessels for any waters, who has not been employed as master or pilot of steam vessels on such waters during the three years preceding the application for renewal,

to satisfy themselves, by an examination in writing, or orally, to be taken down in writing by the inspectors, that such officers are thoroughly familiar with the pilot rules upon the waters for which they are licensed.

When it is known or comes to the knowledge of the local inspectors that any steam vessel is or has been carrying an excess of steam beyond that which is allowed by her certificate of inspection, (it is recommended that) the local inspectors in whose district said steamer is being navigated, in addition to reporting the fact to the United States district attorney for prosecution, under section 4437, Revised Statutes, shall require the owners of said steamer to place on the boiler of said steamer a lock-up safety valve that will prevent the carrying of an excess of steam, and shall be under the control of said local inspectors.

THE ONTARIO LUMBER INDUSTRY.

At the recent meeting of the Ontario Lumbermen's Association in Toronto, the secretary, Mr. Tindall, read the following statistical report:

I submit herewith the following statistical information based upon the best replies received to circular letter of January 12, 1901.

Production, white pine lumber.—The total production of mills in northwestern Ontario, embracing all mills on Georgian Bay, Northern Division of Grand Trunk Railway to Calendar and C. P. R., North Bay to Rat Portage:

	Feet.
Total quantity produced, 1900.....	476,000,000
Total quantity produced, 1899.....	351,000,000

Increase..... 125,000,000

The decrease in production of mills in Saginaw valley and Lake Huron shore of Michigan hitherto supplied by Canadian logs, 92,282,000 feet; net increase 32,718,000 feet entering into markets usually supplied by these mills. The decrease of United States mills in the northwest district of Michigan, Wisconsin and Minnesota, which competes in the same market for 1900 was 478,603,000 feet.

Taking into consideration the large decrease in the United States mills and also the fact that the increase in production is offset by the reduction of the output of the Michigan mills hitherto supplied by Canadian logs, one naturally comes to the conclusion that workings of the law of supply and demand should tend to a maintaining of present prices firmly, if not an increase, particularly as it is likely that large demands on the source of supply referred to will be made from the English market.

In regard to the volume of next year's trade the estimated production of 1901 is 501,900,000 feet, the production of 1900 476,000,000 feet, increase 25,900,000 feet.

The following figures are given of the volume of trade in the United States:

Northwestern mills.—The highest year was 1892, the production being 8,594,222,802 feet.

For the years.	Production.	Stocks on hand.
1896.....	5,725,763,035	4,033,937,435
1899.....	6,056,508,000	2,728,271,000
1900.....	5,485,261,000	2,839,705,000

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo.....	2,631,000	13,000	45,000	55,000	792,000
"afoat.....	1,014,000		162,000		
Chicago.....	11,434,000	3,634,000	3,105,000	504,000	268,000
"afoat.....	57,000	884,000	1,204,000		
Detroit.....	456,000	550,000	3,000	45,000	34,000
Duluth.....	7,327,000	3,509,000	967,000	297,000	75,000
Port William, Ont..	1,446,000				
Milwaukee.....	1,016,000	660,000	713,000	1,000	26,000
"afoat.....			185,000		
Montreal.....	94,000	12,000	142,000	9,000	45,000
Port Arthur, Ont..	250,000				
Toledo.....	561,000	1,742,000	260,000	9,000	
Toronto.....	72,000		2,000		7,000
Grand Total.....	57,682,000	17,061,000	10,302,000	1,174,000	1,669,000
Corresponding Date, 1899.....	53,220,000	14,814,000	5,743,000	1,146,000	1,422,000
Increase.....		1,011,000	12,000		
Decrease.....	812,000			31,000	110,000

While the stock of grain at lake ports only is here given the total shows the figures for the entire country except the Pacific Slope.

Shipping—Negligent Navigation—Presumption.—The collision of a steamship with a pier raises a presumption of negligence in the navigation of the vessel. *Pennsylvania R. Co., vs. Ropner et al.*, 105 Fed. Rep. (U. S.) 397.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Collision—Steam Vessels—Speed in a Fog.—A steamer in a fog is bound to proceed only at a speed which will enable her to come to a standstill by stopping and reversing within the distance necessary to avoid collision after a vessel approaching from another direction can be seen. *The Newport News*, 105 Fed. Rep. (U. S.) 389.

Admiralty—Appeal—Review of Questions of Fact.—Where a clause in admiralty is on appeal on the same pleadings and proofs the decision of the trial court on issues of fact will not be reversed, except for clear error, especially where the witnesses were examined in the presence of the judge. *The Newport News*, 105 Fed. Rep. (U. S.) 389.

Steam Vessels Meeting—Keeping to Wrong Side of Channel.—A collision between a steam ferryboat running between Washington and Alexandria, on the Potomac, and a steamer coming up the river to Washington, during a fog, held to have been caused by the fault of the ferry boat in keeping to the Maryland (left) side of the channel, and in changing her course to port after hearing the signal of the approaching vessel. *The Newport News*, 105 Fed. Rep. (U. S.) 389.

Seamen—Breach of Contract of Employment—Measure of Damages.—It is the duty of seamen wrongfully discharged to use reasonable diligence to obtain similar employment elsewhere, and, where they could have obtained such employment, they can only recover, in a suit for breach of the contract, the difference between what they could thereby have earned and what they would have received under the contract. *The Abbie M. Deering*, 105 Fed. Rep. (U. S.) 400.

Contract—Construction—Person Entitled to Enforce.—Where a charter provided that the stevedore employed by the vessel should be subject to approval by the charterer, the refusal of the latter to approve a stevedore, without giving any reason therefor, does not give the stevedore so disappointed any right of action for damages against him, whatever may be the rights of the other party to the contract. *John B. Honor Co., Limited, vs. Middle Division Elevator Co.*, 105 Fed. Rep. (U. S.) 387.

Damages for Breach.—A shipper who contracted for the transportation to a foreign market of a certain quantity of hay each week cannot recover damages for the failure of the carrier on some occasions to take the required quantity, where it is not shown that there was any request that the deficiency should be made good in subsequent shipments, or any tender of the quantity necessary therefor, or that libellant suffered any actual loss by reason of the breach of the contract. *Bloomington vs. Wilsons & Furness-Leyland Line*, 105 Fed. Rep. (U. S.) 384.

Employment of Stevedore.—A clause in the form of a charter party, used for the charter of a steamship, giving the charterer the right to provide a stevedore at the steamer's expense, was stricken out, and one inserted as follows: "Stevedore employed by vessel to be approved by charterers." Held, that such provision did not bind the charterer to approve a stevedore employed by owners, but required the one selected by the owners to be subject to the charterers' approval. *John B. Honor Co., Limited, vs. Middle Division Elevator Co.*, 105 Fed. Rep. (U. S.) 387.

Contract for Transportation of Goods—Right of Rescission for Breach.—A shipper who contracted with a steamship company for the transportation from New York to London of 100 tons of hay on each of the company's weekly steamers for a year, and who was entitled to rescind the contract because of the frequent failure of the company to take the required quantity which was tendered, waived such right by electing to treat the contract as still in force, and making subsequent shipments thereunder, and could not thereafter rescind because of such past defaults. *Bloomington vs. Wilsons & Furness-Leyland Line*, 105 Fed. Rep. (U. S.) 384.

MARINE PATENTS ISSUED.

Patents issued February 12, 1901. Reported especially for the MARINE RECORD. We furnish complete copies of patents at the rate of 10 cents each.

667,762. Speed recorder and course indicator for ships. A. Bopp, Berlin, Germany.

667,785. Compass deviation finder. A. Lietz, San Francisco, assignor to the A. Lietz Co., same place.

667,836. Ship's clinometer. F. W. Wood, Newport News, Va.

667,859. Ship's telegraph. F. W. Wood, Newport News, Va.

668,071. Apparatus for coaling ships at sea. J. E. Walsh, New York, N. Y.

668,106. Steering mechanism for ships or vehicles. G. A. Long, Boston, Mass.

A NEW and very useful pamphlet has been issued by the Government. The full title is: "Table of Distances in Nautical and Statute Miles, by the shortest Navigable Routes, as determined by the U. S. Hydrographic Office, Bureau of Equipment, Washington, D. C." It is a most valuable reference book, and as it is sold at 10 cents per copy, everyone interested in commerce and the distance one port is from another, should obtain one.



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CLEVELAND, O., FEBRUARY 21, 1901.

THE thanks of the RECORD are due the Dominion Minister of Marine and Fisheries for a copy of the thirty-third annual report of the Department.

WE have to thank the officials of the St. Mary's Falls canal, Mich., for many courtesies, including the most recent one of furnishing us the statistical report of lake commerce passing through the canals at Sault Ste. Marie, Michigan, and Ontario, during the navigation season of 1900.

WONDER what Montreal is squealing or fussing about in giving a thirty-foot channel from tidewater to that port, when the Clyde has furnished such an object lesson as the port of Glasgow points out. A boy could formerly wade across the rivulet at Glasgow, where now the largest sized Atlantic, or any other tonnage may safely steam. A couple of such dredges as Mr. Bates has just completed for the Russian government, would make short work of the soft bottom in the channel from Quebec to Montreal.

THERE is no reason why the bulk of the tonnage, outside of the regular iron ore carriers and line boats, could not be pooled together and managed from a central office, established, say, in Cleveland. The bottoms being duly classed and rated as to carrying capacity, etc., the several owners having disengaged tonnage could meet as a board of directors, say, for an hour each morning, see what charters were offered or offering, apportion same among the fleet in port or to arrive and leave the details of management to a thoroughly qualified manager and his staff. An equally competent advisory board and management would be required at Chicago and also Duluth, other ports, especially Buffalo, would be within easy communications by wire, when particulars regarding discharging, chartering or loading could be promptly made known to the proper department at the central office.

HISTORY repeats itself. Even shipbuilding is leaning to special tonnage for particular trades, as in the by-gone ages. What would have been the use, sense or gain, for instance, of putting a "double-ended serving mallet", "wave planer" or "bally-hoo" in the slave trade as carrier or chaser, in the tea trade of earlier days, the fruit trade, or scores of others at that time, and the same applies even in a greater measure in these days. It is good policy for owners to order, and see that builders build and that underwriters insure on the classification and rating of a universally accepted society, specially built tonnage, on the best possible terms. There is also, we believe, somewhat of a difference between the highest-classed automobile and a push cart; so is there between the most expensive and costly fancy tonnage and an iron ore droger. Trade, size, cost, construction, etc., etc., enter into the ownership of floating property.

THE Hartford Steam Boiler Inspection and Insurance Co. issues the following in their list of boiler explosions last season:

"An auxiliary boiler exploded, on September 28th, on the schooner Thomas Holland, of Port Huron, Mich., while off Beaver Island, near Escanaba, Mich. The explosion tore up the forward deck and set fire to the sails and rigging, which were totally destroyed. Charles Marin and Anton Anderson were seriously scalded."

We are not aware that due, if any, publicity was given to the findings of the local inspectors of steamboats relative to the causes leading up to this accident, all but involving loss of life. Regularly and continually are tubes being blown out of tubulous boilers, strandings and collisions taking place, but, as we have said, the official reports of inquiries don't seem to develop, nor are any suggestions thrown out or recommendations made in order to obviate such casualties in the future. We have found the Steamboat Inspection Service inclined to secrecy in fulfilling some of the ordinary and daily duties of the department, and there seems to be a permanent warning hung out at the local offices to make nothing known until the inquiry has filtered through the channels at Washington. As regards the local inspectors of steamboats at lake ports, they are, as a rule, well-balanced, experienced men, but, they must follow their instructions, hence, we find this branch of the Treasury Department dominated over by a "Bismarckian" of the highest attributes. A man of ripe political experience, who can train his canvas for a fair wind all the time, and arrange for his subordinates to do the same. This one man-power is not for the best interests of the service, or the advancement in any sense of the domestic marine. Let us trust that if the shipping bill, in any form, meets with the favor of Congress, and an oversea tonnage is secured for the country, that this arm of the Treasury Department will be obliterated and an adequate bureau established for the upbuilding of the inclusive mercantile marine, and the relevancy of laws relating to the inspections of vessels lasting at least from one season to another

IT is of the first importance that the "Rules of the Road" as between Canadian and United States tonnage should be mutually known and adopted, in point of safety, the one set of sailing and steering rules might be observed by both countries, at least from Montreal, west. We pointed this out when the so-called "White" bill went into force, but the necessity has now come much nearer since so many vessels are being built on this side of the lake boundary line destined for the St. Lawrence trade. We are pleased to see that Capt Donnelly, of Kingston, has again taken the initiative in this important question, and that a delegation, including the chairman on Aids to Navigation of the Lake Carriers' Association, appeared a few days ago before the Deputy Minister of Marine and Fisheries at Ottawa in behalf of this and other features of pressing importance to Canadian and American sailing interests, though the "Rules of the Road" is a big enough matter for any qualified committee to handle without tacking on any other features until that was well out of the way, thoroughly understood and amicably settled. To those of the lake fraternity who have not as yet paddled around the St. Lawrence, we may observe that a large percentage of those in charge of vessels in that locality are French-Canadians, excellent pilots, skilled and positive, also proverbially obstinate, contrary to the custom of this side of the international line, their steering and sailing rules are not altered, amended, generally jumble-eyed and changed each season by a board of experts, so that they will stick to what they have been accustomed to, or will very likely do so, and it is too late to attempt any changes or argue with a French-Canadian pilot regarding the right of way, etc., when vessels are coming together, or within close proximity to each other, either when towing, under steam, or canvas. There should be no let up to this question until the steering and sailing rules are made uniform, ours are fixed by Act of Congress as far east as Montreal. How does Canada stand?

MORE CANALIZING.

A special from Washington states that the House committee on railways and canals has acted favorably on the bill to incorporate the Lake Erie and Ohio River Ship Canal Co. The company is authorized to construct a canal from a point at or near Pittsburg, on the headwaters of the Ohio river and near the junction of the Monongahela and Allegheny rivers; thence via the Ohio, Beaver and Mahoning rivers to Niles, O., thence through Ohio to the most accessible harbor on Lake Erie. Several branch canals also are provided.

BENEFIT FUND—FEDERATION OF EMPLOYES.

C. H. Keep, Esq., secretary of the Lake Carriers' Association, has sent to all the members the plan decided on for the beneficial federation of captains, mates and engineers and all other employees. The members of the committee that have already assented to the plan represent over 300,000 tons of vessel property. Mr. Keep is anxious to get an early reply from the members on the proposition, the conditions of which follow:

1. A board of five trustees to be formed to administer the fund and conduct the affairs of the federation.

2. For the purpose of providing a fund for the payment of benefits in case of accidental death, or disabling injury to employes on lake vessels, the vessel owner shall pay to the trustees, on notice, 1 cent per ton on his net enrolled vessel tonnage, and shall also pay from time to time through the season, a rate to be fixed and not to exceed 1 cent per man per day for each single benefit book held by men employed on his own vessel, being an addition to and 50 per cent. of the amount currently to be paid into the fund by the men themselves.

3. Any man employed upon any vessel in the Lake Carriers Association will, upon application, be supplied with a benefit book, and so long as he complies with the rules and regulations and makes the payments therein provided for, he will be a member of the federation and entitled to the benefits accruing from such membership, which benefits shall include, so far as possible, a preference in employment on vessels having membership in the Lake Carriers' Association. The committee may determine upon an arrangement by which each man in the higher grades of employment may have two or three benefits, paying proportionately.

4. The total fund thus created by contribution from owners and employes, will be liable to the full amount thereof, and no more, for stipulated payments to be made upon the accidental death or the permanent or temporary disability from accident of members of the federation, provided such accident arises out of the employment of such member on a contributing vessel.

5. Any member of the federation may also, if he so desired, be a member of any other beneficial association or union.

6. No vessel owner shall incur any liability as the result of the federation plan beyond the exact payments to be made by him as aforesaid.

7. No vessel owner will be bound by his assent hereto, unless at least 90 per cent. of the entire tonnage represented by the members of the Lake Carriers' Association has assented thereto.

8. Upon the assent of not less than 90 per cent. of the tonnage aforesaid, the undersigned committee shall be thereby authorized to proceed at once, under advice of Harvey D. Goulder, counsel for the association, to perfect the plan of federation in its full detail, and to make it effective on April 1, 1901, or as soon thereafter as may be found practicable. A. B. Wolvin, Frank J. Firth, W. C. Farrington, H. Coulby, E. S. Mills; J. A. McGean, H. A. Hawgood, J. H. Sheadle, A. W. Colton, C. W. Elphicke, David Vance, Thomas Cranage, A. A. Parker, J. C. Gilchrist, George P. McKay, Harvey D. Goulder, C. H. Keep, committee on benefit federation.

CARBONISING COATING.

WE have received from Mr. C. E. Gritton, A. M. Inst. C. E., of 33 King street, London, W. C., a small sample iron plate coated with carbonising coating, which is claimed to be the best preservative known for iron and steel against rust, corrosion and decay. The composition is a chemically combined paint, the preparation of which is founded on chemical researches instituted by the Civil and Mining Engineers of Great Britain in 1878. One gallon of the coating will cover 1,000 sq. feet of surface, one coat, and it is stated to be proof against the action of alkalis, brine, ammonia, acids, sulphur fumes and locomotive smoke. From a test that we have made with the sample submitted to us, it appears also to be capable of successfully withstanding the effects of a considerable temperature. It is made by the Goheen Manufacturing Co., of Canton, Ohio, and judging from the many important American firms that are using it, it appears to be giving a satisfaction which is not generally obtainable from ordinary structural paints. Mr. Gritton, directs our attention to the fact that his tender has been accepted by the India Office for a considerable quantity of the coating for use in Assam, and on the Indian State Railways.—Shipping World, London.

HYDRAULIC DREDGES—NEW YORK HARBOR.

Two of the largest and most thoroughly equipped hydraulic suction hopper dredges ever constructed in the United States have recently been completed for the Metropolitan Dredging Co., of New York, organized to carry out the contract for dredging about 40,000,000 cubic yards of sand and mud in the east channel improvement at New York Harbor, which was awarded to Mr. Andrew Onderdonk in 1899. Briefly described, each of the dredges is of 7,000 tons displacement, 300 feet long, 52 feet 6 inches beam, 25 feet molded depth, and has a hopper capacity of 2,800 cubic yards of material and a speed of 10 knots.

The project for the east channel improvement at New York harbor was authorized by Congress at its session of 1898-9, and bids for carrying out the work were received on March 24, 1899. According to the specifications upon which bids were asked, the work to be done was as follows:

The channel known as East channel, at the entrance to New York harbor, is to be made 2,000 feet wide and 40 feet deep at mean low water throughout its entire length between the main channel and the sea, where the present depths generally range from 16 to 40 feet. The amount of excavation necessary to complete the above described work will not exceed 39,020,000 cubic yards measured in place. The mean rise of tide is 4 feet. So far as is known, the material to be excavated is mainly sand in the outer or seaward part of the channel and mud in the inner part, with small but varying proportions of fine gravel, shells and clay. The average distance to place of deposit in deep water in the ocean will be about eight miles. The contractor must begin work of excavation within twelve months from the date of approval of the contract. The rate of progress required for the East channel work is for the first year 400,000 cubic yards per month for eight months, and for each succeeding year 1,200,000 cubic yards per month for eight months. All excavation is to be paid for by scow measurement.

Only one bid was received for the work, this bid coming from Mr. Andrew Onderdonk, of New York and offering to remove 40,000,000 cu. yds. of the materials specified for 9 cts. per cubic yard. In this bid Mr. Onderdonk stated that two dredges would be employed, or more if necessary. After consideration by the engineers of the War Department, this bid was accepted in May, 1899. The dredging company then consulted with Mr. A. G. Lyster, Chief Engineer of the Mersey Docks and Harbor Board, and with the engineers of the Marine Department of the Maryland Steel Co., and perfected plans for dredges modeled in respect to general principles upon the dredges "Branker" and "Crow" employed in the Liverpool harbor work, but embodying many improvements in machinery and general equipment.

RAILROAD BUYS GRAIN ELEVATORS

One of the most important deals in river front property which has taken place in Buffalo in recent years has just been consummated. By it the New York Central railroad becomes the owner of the three Niagara elevators on the north side of the Buffalo river. They are Niagara A, B, C, with a combined capacity of 2,150,000 bushels. A has a capacity of 800,000 bushels, B of 1,200,000 and C can carry about 150,000. The consideration given for the three buildings is kept private.

This purchase by the New York Central will give that company the best facilities for handling grain of any line on the lakes. By it the Central will be able to handle all of their grain and much outside business also.

The acquisition of the elevators is important in another way than giving the Central additional elevating capacity. The property on which the buildings are situated, and the small slice of land which goes with the sale, were the only pieces of land on the north side of the river between Michigan street and the Ohio basin which was not owned by the railroad company. The sale of the elevators has been pending for upwards of twenty-five years. Every spring the Central had made slight efforts to get control of the buildings, and each time had failed to do so. The deal was consummated by George F. Sowerby, acting for the estate of Thomas Clark, and President Callaway of the Central. Negotiations were made by telegraph.

The purchase will not affect the workings of the Western Elevating Association, it is said, at least for a year or so. The Central's other two elevators have always been in the association and it is expected they will remain there, although there is a possibility, of course, that they will withdraw. The two elevators were at one time of sufficient capacity to handle all the grain the Central's boats brought down the lakes, and which their trains took east; but of late years they have been inadequate. The grain of the Central was handled in as many as a half dozen elevators. Now, it is said, with the five, the company can handle all its own grain. The total season capacity will be 10,000,000 bushels, which is as much, it is stated, as the Central ever handles.

CANADIAN AIDS TO NAVIGATION.

Capt. George P. McKay, chairman of the committee on navigation of the Lake Carriers' Association, is now in correspondence with officials of the Dominion marine department. He is supporting the efforts of Canadian vessel owners to secure aids to navigation that are very much needed on the lakes and is working in harmony with Capt. T. Donnelly, chief inspector for the Canadian Lake Underwriters' Association, Mr. John Gaskin of the Canadian Vessel Owners' Association, and Mr. W. J. White, solicitor of Toronto, who is thoroughly acquainted with the needs of shipping in Canada. These gentlemen, including Capt. McKay, were very cordially received as a delegation by officers of the Canadian government.

It has been decided to establish, just as speedily as possible, a first-class life-saving station on Point Au Pelee, Lake Erie, with up-to-date appliances and a paid crew. The attention of the department has also been directed to the fact that the existing light on Middle Island, Lake Erie, has been obscured and its usefulness destroyed by trees that have grown up between the channel and the light.

On the subject of the difference between Rules of the Road for vessels of the United States and those of Canada navigating the lakes, a lengthy document was submitted to the Department. It was explained that the conflict in signals, etc., is very liable to cause confusion and accidents. Modifications suggested in the Canadian rules so as to have them conform with the White law, under which vessels of the United States are operated, are fully set forth in the document.

The Department of Public Works is asked to establish some means of communication—telephone or telegraph—between Long Point light-house and Port Rowan, Lake Erie. Vessels in shelter at Long Point cannot now communicate with the mainland, and it often happens, too, that vessels in distress in this vicinity could more readily secure assistance if they had means of ready communication.

THE ERIE CANAL.

It is now announced that Gov. Odell, of New York, will not submit the report of State Engineer Bond on the 1,000-ton barge canal survey to the legislature until next week. Last week it was said the governor would send the report and the accompanying message to the legislature this week. The reason given for the postponement is that the figures submitted by Engineer Bond were not sufficient to allow the governor to make up his mind regarding certain matters concerned therein. It is said that the state engineer's report will add another twenty million dollars to the barge canal estimate, making it nearer eighty than sixty million dollars.

THE COLLINGWOOD SHIPYARD.

The keel has been laid and work is now in progress at the Collingwood, Ont., shipyard, on what will be one of the finest passenger and freight steamers on the Great Lakes. The vessel is being built for the Sarnia and Duluth route, and in size and appointments will be larger and finer than the Manitoba. The length of the new steamer will be 325 feet, beam 43 feet, molded depth 27 feet. Her engine will be a triple expansion and steam is to be furnished by four boilers. The speed of the craft is to be fifteen miles an hour loaded, and seventeen to eighteen miles light. This is the first keel laid in the new shipyard and it is expected the vessel will be completed by the first of next September.

A NIAGARA FALLS LIFE SAVING STATION.

An agitation has been started at Niagara Falls for the establishment of a life-saving station at that point by the Federal Government. There is little doubt that a crew of experienced men could save many lives here during the season if they were stationed at points on Green Island and on Goat Island.

John Level paid a visit to Washington to interest the authorities in the project. Mr. Level has all the equipment needed and would give it if the government would furnish the men. Of course, if the station was authorized the department would attend its own equipment, buildings, etc.

NEW STEAMBOAT LINE.

The Toronto, Buffalo and Montreal Steamboat Co., limited has been incorporated with a share capital of \$100,000. The provisional directors are Judge Morgan, John A. Carlaw, H. W. VanEvery, T. P. Coffee and Dr. W. T. Stewart, all of Toronto.

CANADA-ATLANTIC TRANSIT LINE.

The annual meeting of the Canada-Atlantic Transit Co. was held last Thursday at Duluth. The old directors were re-elected as follows: James T. Rose of Duluth, Harry L. Moore of Minneapolis, and W. H. Burk, W. R. Sache and H. F. Stevens of St. Paul. At a subsequent meeting held by the directors, the former officers were re-elected as follows: President, John R. Booth of Ottawa; vice president and general counsel, Hiram F. Stevens of St. Paul; secretary, James T. Rose of Duluth; treasurer, W. H. Burk of St. Paul; general manager, E. J. Chamberlain of Ottawa.

During the past year the Canada-Atlantic Transit Co. operated five boats, the George N. and Arthur Orr, W. H. Gratwick, Kearsarge and Ottawa. The company owns the two Orrs and the Ottawa and the Gratwick and Kearsarge were under season charters. The company this winter is building a duplicate of the Ottawa at Toronto. The plans of the company for this season regarding tonnage have not yet been announced, but it is understood that it will be increased over that of last season.

THE NEW SHIP "WILLIAM P. FRYE."

The shipbuilding firm of Arthur Sewall & Co., of Bath, Maine, which closed the last century with the launch of their hundredth ship since 1828, has stretched the keel of their first ship for this century. In recognition of Senator Frye's conspicuous services to the American merchant marine, this vessel, a four-masted steel ship of the largest size, will be named "William P. Frye." Senator Frye has accepted the compliment, and the ship will probably be launched in October.

CANADIAN AIDS TO NAVIGATION.

The extended coast line of Canada, and numerous bays, inlets, rivers, lakes, harbors and other navigable waters require a large number of buoys, which are maintained at an average cost of \$55,000 per annum. For the fiscal year ending June 30 last, the service cost \$66,980.48. The cost of this service is increased in years when new contracts are given for steel signals and other coast buoys.

The total number of light stations, light-ships and fog alarm stations in the Dominion on June 30, 1900, was 693, and lights shown 869; the number of steel whistles and fog-horns, bells and guns 88; the number of light-keepers and engineers of fog alarms with masters of light-ships was 693.

During the past fiscal year the expenditure for maintenance of lighthouse and coast service amounted to \$456,254.48; construction, \$60,239.92; total for maintenance and construction \$516,494.40; while for the previous year the expenditure for the lighthouse and coast service, including construction was \$537,457.56; showing a decrease of expenditure for the year ending June 30 last, of \$20,963.16.

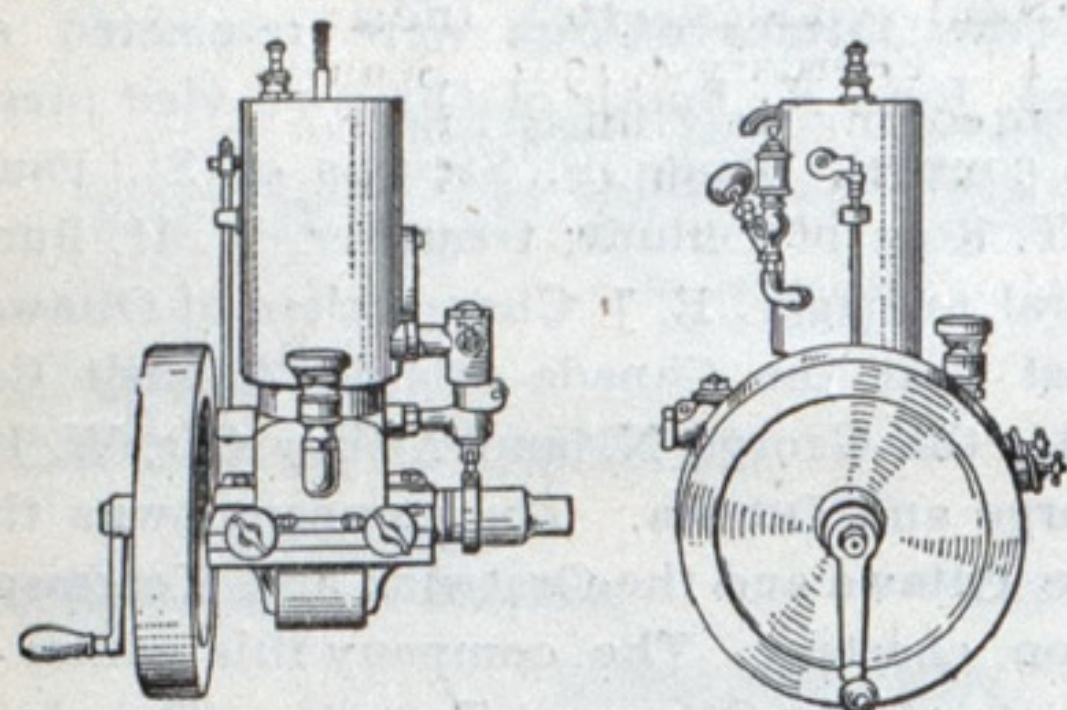
There are now about 330 districts including harbor, bays, rivers, and lakes buoyed with over 3,000 buoys.

It is said that Capt. William Foster, who died recently at Mobile, was the last man engaged in the slave trade between Africa and the United States. The Springfield Republican says that his case recalls the lawless revival of the slave trade just before the outbreak of the civil war. The profits of the cotton planters employing slave labor had become so great in the lower Gulf States that the slave market enjoyed a great boom. The price of negroes doubled during the fifteen years previous to the war. Senator Hammond, of South Carolina said in the Senate that the very negro who as a boy in 1828 would have brought \$400 would then (1859), as an old man sell for \$800. Thus the profit on negroes stolen in Africa and successfully smuggled into the United States, became enormous, provided they could be handled by the shipload. The yacht Wanderer landed over 300 negroes direct from Africa at Brunswick, Ga., in 1859. The owners and captain of the yacht were prosecuted by the Federal authorities in Georgia, but no jury could be found to convict them.

THE Russian Government intends to build a fine dock at Vladivostok, at the mouth of the Amur river, capable of taking the largest ships afloat, the length being stated at 700 feet. In addition to the building of this fine dry dock, the Russian authorities propose to erect at the same place ample shops and foundries. Large additions to the gun-making plant of the various dockyards are in contemplation, and it is also directed that the manufacture of smokeless powder and other explosives shall receive the attention their importance deserves.

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MODERN OCEAN COAL GLUTTONS.

In the last ten years the race for the trans-Atlantic record has been far more interesting than any other period, for it has been in this decade that the great coal burners have been built. It is also the "twin-screw period" of ocean navigation, and with the twin-screws have come greater speed, more and heavier engines, and corresponding increase of boiler power. The American liners Paris and New York were the first to embody the new and radical departures from the old methods of shipbuilding, and in many respects they marked an entirely new era in shipbuilding. They were, from the first, brilliant successes in speed and seaworthiness, but they were also responsible for a new era of coal consumption that has at last brought the steamship companies to the point where they are anxiously looking for some let-up. The Paris soon broke the record from New York to Queenstown, making the trip in much less than six days at an average speed of 20 knots an hour. The Teutonic and Majestic, which followed, though larger in every way, were slower in speed, and less expensive in operating. With only 18,000 indicated horse-power, against the 20,000 of the Paris, the Teutonic consumes only 300 tons of coal per day to develop her 19½ knots. The two magnificent steamers of the Cunard Co., the Lucania and Campania, which soon followed the launching of the American liners, established new ocean records, and new coal-consuming figures. The Campania, with 19,000 tons displacement, had 30,000 horse-power, and developed a speed of 22 knots, with a daily coal consumption of about 475 tons. The modern coal gluttons were in full force by this time, and the steamship companies had to confess that the lowering of the record meant not only larger ships, but heavier coal cost. The Kaiser Wilhelm der Grosse, of the North German Lloyd Steamship Co., was built on lines which fully recognized this fact. She is 26 feet longer than the Campania, 1 foot greater in beam, and has 1,000 tons more displacement. Her fastest trip was made at an average speed of 22.79 knots, covering in one period of twenty-four hours 580 knots. Nevertheless, her horse-power was slightly less than that of the Campania, being 28,000, against the latter's 30,000, and her coal consumption a trifle more, amounting, according to the owners' figures, to 500 tons a day. The Kaiser Wilhelm der Grosse, the Oceanic, and the Deutschland are the three modern steamers that offer the best comparisons and represent the highest effort of the best marine architects of the day. Differing somewhat in size, shape, and general equipment, they nevertheless present features so much alike that valuable lessons can be drawn from them. The Oceanic exceeds either steamer in the matter of length, beam, and displacement, and has the same horse-power as the Kaiser Wilhelm der Grosse, but is much slower than this former record-holder. The Deutschland develops 35,000 horse-power, against the 28,000 of the other two, and to feed the engine

sufficiently to maintain a 23-knot speed she requires the greatest amount of coal ever fed to an ocean steamer.—Geo. E. Walsh in Cassier's Magazine.

THE MOST ECONOMICAL SIZED LAKE TONNAGE.

George Y. Wisner, Esq., Detroit, in discussing the cost of transporting cargoes upon the Great Lakes recently, set up the claim that for distances of 1,000 miles and less, the most valuable type of vessel to build is one about 480 feet long, 52 feet beam and 19 feet depth. This is now the typical large freighter of the lakes, only a few vessels exceeding these dimensions, the Detroit Tribune says.

Frank E. Kirby was quoted by Mr. Wisner, and the latter showed by a table prepared by that well known consulting engineer that vessels having dimensions 500 by 54 by 27 showed the minimum cost of transporting cargoes in the open lake, and that after this size was reached any increase to the cost was accompanied by an increase in the cost per mile of transportation. The cost per ton per mile in the open lake is a small part of the problem, however, says Mr. Wisner, and in reaching a final conclusion the other elements of delay at terminals and cost to man, other things ought to be considered. So he has prepared a second table of his own, taking into consideration these other factors. Of course, the larger ship carries the larger cargo, but she costs more, cannot be handled so quickly at terminals and the fixed charges are constantly greater. Mr. Wisner's table follows:

	480x52x19	500x54x27
Dimensions of the ship.....	480x52x19	500x54x27
Time of round trip, days.....	7	7
Detention at terminals, days.....	3	4
Wages and subsistence.....	\$600	\$682
Fuel, oil and waste.....	900	1,183
Insurance on ship.....	477	830
Insurance on cargo.....	860	1,260
Miscellaneous expenses.....	30	40
Interest on investment.....	530	922
Deterioration, etc.....	530	922
Profit to shipowner.....	400	600
Total.....	\$4,336	\$6,439
Rate per ton mile in mills.....	378	383

This, says Mr. Wisner, shows that there is a very trifling advantage in favor of the larger ship, not worth considering. The actual cost of moving a ton of freight one mile in the open lake is a very small part of the transport rate, making the questions of detention at terminals and length of haul the determining factors in the problem of steambarge construction. Therefore, says Mr. Wisner, it is useless for Congress to appropriate money to deepen the connecting waterways of the Great Lakes beyond twenty-one feet, as the commerce of the Great Lakes can be just as advantageously handled in carriers of the present largest type, 480x52x19, their superior quickness making up for the superior carrying capacity of the larger vessel.

Winter Moorings

A small book of about 32 pages, containing alphabetically arranged lists of steam and sail vessels, also tugs, showing where each one is located for the winter. This little booklet may be had by enclosing 10 cents in stamps to

The Marine Record Publishing Co.

WESTERN RESERVE BUILDING,
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CHICAGO'S FIRST WHITE CHILD.

Alex. Beaubien, who has long held the prize as being the first white person born in Chicago, has had his claim questioned by Capt. Charles Gale, of Sarnia, Ont., who asserts he was born in Fort Dearborn on February 7, 1814, whereas Mr. Beaubien was not born until January 20, 1822. Mr. Gale's father was an army surgeon in charge of the hospital of the post at the time. The youth became a lake sailor, and in 1839 was in command of a ship. Writing to the Chicago Journal some time ago, among other things, Captain Gale said:

"In the spring of 1839 I was in the brig John H. Kinzie. I landed the first boiler and engine, with bricks, at Muskegon for the first sawmill. I was then in charge of the steamer General Brady. I then went to Chicago and landed 400 barrels of flour, 100 barrels of whiskey, and a large quantity of cheese, butter and other goods. The entire shipment was consigned to Messrs. Dole & Newberry. They paid the freight to me on same. The cargo was sent ashore on a lighter, as it was impossible to go into the river, it was so shallow.

"When in Chicago this time I bought a paper, the first I ever saw sold in the streets. Michigan merchants, in order to get credit in New York at this time, reported themselves from Chicago. This made me feel proud of my birthplace. Leaving Chicago, I went to Michigan City and loaded 4,000 bushels of wheat. That was the first grain shipped from Lake Michigan, and it took us five days and nights to load it on the boats from lighters. In the fall of the same year—1839—I was in the brig Virginia. We took on 7,000 bushels of corn in the ear at Chicago. In 1840 a few loads were shipped from Chicago, and the trade grew steadily thereafter. In 1853 I took on a load of wheat in the bark White Cloud from Munger & Armour on the north corner of the harbor. The river was deep enough then to let ships enter. After making one trip from the same place with grain in 1854, I stayed in Chicago and bought grain for Handy, Warner & Co., Cleveland. I used to walk every day to Bridgeport to get grain from canal boats."

TRAFFIC THROUGH ST. MARY'S FALLS CANAL.

The following is a portion of a statistical report of lake commerce passing through the canals at Sault Ste. Marie, Michigan, and Ontario, during the season of 1900, compiled under the direction of Lieut.-Col. G. J. Lydecker, Corps of Engineers, U. S. A., from the report of assistant engineer and general superintendent Joseph Ripley.

COMPARATIVE FREIGHT RATES.

Comparative statement of freight rates to and from Lake Superior for the seasons of 1899 and 1900:

Articles.	Average Cost per Unit.	
	1899	1900
Coal, net tons.....	\$0 46	\$0 44
Flour, barrels.....	13	12
Wheat, bushels.....	036	02
Grain (other than wheat) bushels.....	036	02
Manufactured Iron, net tons.....	1 70	2 00
Pig Iron, net tons.....	1 50	1 50
Salt, barrels.....	15	15
Copper, net tons.....	2 00	1 60
Iron Ore, net tons.....	70	1 05
Lumber, M. ft. B. M.....	3 00	2 30
Silver Ore, net tons.....	2 50	2 00
Building Stone, net tons.....	2 00	1 50
General Merchandise, net tons.....	2 50	2 00

Total cost of transportation 1899, \$21,959,707.25.

Total cost of transportation 1900, \$24,953,314.71.

VESSEL DIMENSIONS.

Table showing classification of registered vessels as to the length and beam over all:

Length.	Beam.	Number of Vessels.
Up to 100 feet.....	Between 6 and 24 feet	82
Between 100 and 200 feet.....	Between 22 and 38 feet	320
Between 200 and 300 feet.....	Between 30 and 42 feet	285
Between 300 and 400 feet.....	Between 38 and 48 feet	136
Between 400 and 500 feet.....	Between 45 and 53 feet	56

Table showing maximum records made by vessels during the season:

Steamer John W. Gates, single cargo 8,462 tons, American Steamship Co.; barge Madeira, single cargo 8,206 tons, Minnesota Steamship Co.; steamer Presque Isle, freight carried, 195,557, Cleveland Cliffs Iron Co.; steamer Troy, miles run 45,318, N. Y. Central & Hudson R. R. Co.; steamer John W. Gates, mile-tons, 154,554.378, American Steamship Co.

GENERAL SUMMARY.

Statistical summary of lake commerce through canals at Sault Ste. Marie, Michigan and Ontario, for season of 1900:

Total mile-tons.....	21,179,229.014
Total freight carried, net tons.....	25,643,073
Total valuation placed on freight carried.....	\$267,041,959
Average value per ton of freight carried.....	\$10 41
Total amount paid for freight transportation.....	\$24,953,314.71
Average distance freight was carried, miles.....	825.9
Cost per mile, per ton, mills.....	1.18
Average cost per ton for freight transportation.....	\$0 97

Total number registered vessels using the canals.....	879
Total number of passages by unregistered craft carrying freight.....	454
Time American lock was operated, days.....	238
Time Canadian lock was operated, days.....	238
Total valuation placed on registered vessels.....	\$69,735,159
Total number of passengers transported.....	58,555
Freight carried by	
Registered vessels, tons.....	25,585,934
Unregistered vessels, tons.....	57,139
American vessels, per cent.....	97
Canadian vessels, per cent.....	3
Passengers carried by	
American vessels, per cent.....	42
Canadian vessels, per cent.....	58

The canal postoffice delivered 104,587 pieces of mail during the season, consisting of 93,689 letters, 5,406 postals, 4,898 newspapers and 594 parcels. In addition to this, 674 pieces were returned to the city postoffice after being held 30 days uncalled for, and 2,052 pieces were forwarded to new addresses. This shows an increase over the previous year of 7,209 pieces of mail.

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co., New York, report the condition of the eastern freight market as follows:

We have very little of interest to report in respect to steam freights, business in all directions being restricted to very small limits. Tonnage continues to offer freely for grain, but new orders are difficult to consummate, owing to the difference between owners' and charterers' ideas. Steamers in position to assure February shipment command a slight premium, owing to the scarcity of boats in that position, but for later loading there is no appreciable demand. What little enquiry there is from the Atlantic cotton ports is of spasmodic nature, principally combined with phosphate shipments previously contracted for. Timber chartering is of a very limited nature as the few fixtures will show.

The inquiry for sailing vessels is not very brisk, whilst on the other hand tonnage is being offered but sparsely. Under these circumstances we can only report a quiet but firm market, with rates about steady. We do find, however, some demand for lumber tonnage from the Gulf to South America and consider a slight advance in this line probable. Case oil freights to the east are extremely firm, with no apparent disposition to move either way.

SEISMOLOGY.

The seismographs at Toronto and Victoria have been kept in operation, and many most interesting records of distant earthquakes have been recorded and very flattering comments on the results obtained in Canada have been made by the Committee of Seismological Research of the British Association for the Advancement of Science. Canada was one of the first countries to take part in a seismological survey of the world, a survey in which nearly every British colony has since joined. Perhaps the most interesting among the records obtained were those of the great quakes in Alaska, in September, when much damage was wrought by sea-waves and land-slides—the shake was registered in all parts of the world, clearly showing that important earthquakes shake the whole globe.

Government Proposals.

U. S. ENGINEER OFFICE, 1637 Indiana Ave., Chicago, Ill., February 4, 1901. Sealed proposals for dredging in Chicago harbor will be received until 12 noon, central time, March 12, 1901, and then publicly opened. Information furnished on application. J. H. WILLARD, Maj., Engrs. 6-9

U. S. ENGINEER OFFICE, Galveston, Tex., January 28, 1901. Sealed proposals for building hull and machinery of self-propelling hydraulic dredge, will be received here until 2 p. m., February 28, 1901, and then publicly opened. Information furnished on application. C. S. RICKE, Capt., Engrs. 5-8

U. S. ENGINEER OFFICE, Buffalo, N. Y., January 25, 1901. Sealed proposals in duplicate for construction of concrete superstructure on breakwater at Buffalo, N. Y., will be received here until 11 a. m., February 25, 1901, and then opened. Information furnished on application. T. W. SYMONS, Maj., Engrs. 5-8

U. S. ENGINEER OFFICE, Pittsburg, Pa., February 7, 1901. Sealed proposals for completing two locks and dams and building four locks and dams on Monongahela River, above Morgantown, will be received here until 12 M., March 9, 1901, and then publicly opened. Plans may be seen here. Information furnished on application. C. F. POWELL, Maj., Engrs. 6-9

SEALED PROPOSALS will be received at the office of the Light-House Board, Washington, D. C., until 2 o'clock, p. m., March 2, 1901, and then opened, for furnishing the materials and labor of all kinds necessary for the construction and delivery of the twin-screw, steel, steam light-house tender Larkspur, in accordance with specifications, copies of which, with blank proposals and other information, may be had upon application to this office, or at the office of the Light-House Inspector, Tompkinsville, N. Y. F. J. HIGGINSON, Rear Admiral, U. S. N., Chairman. 7-8



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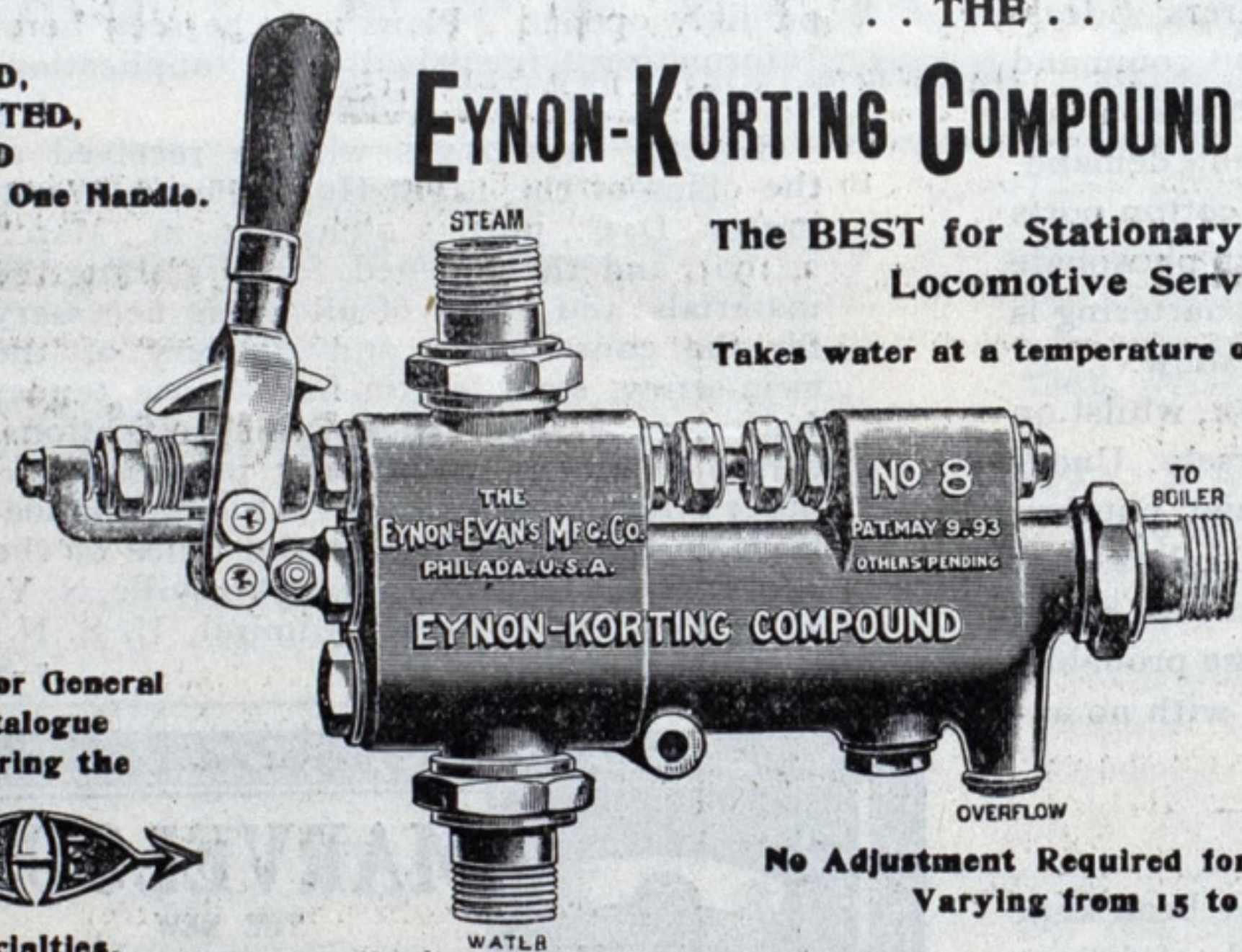
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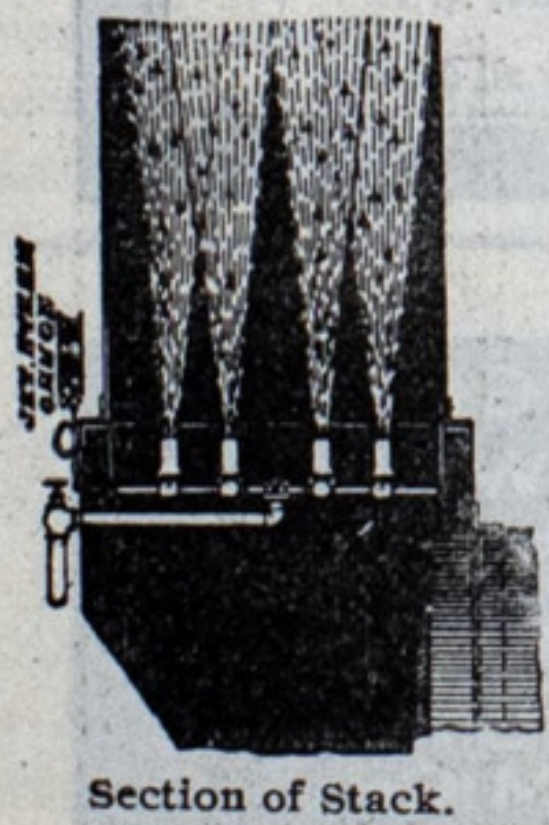
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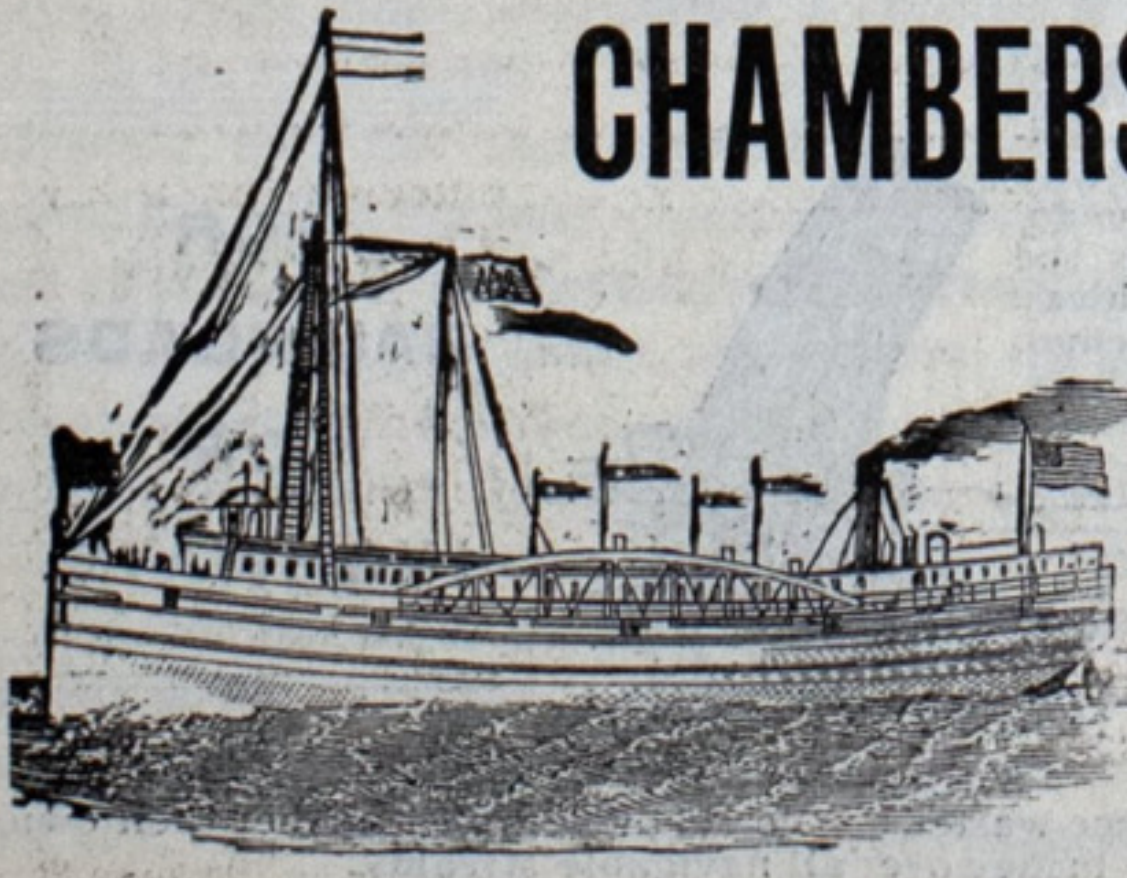
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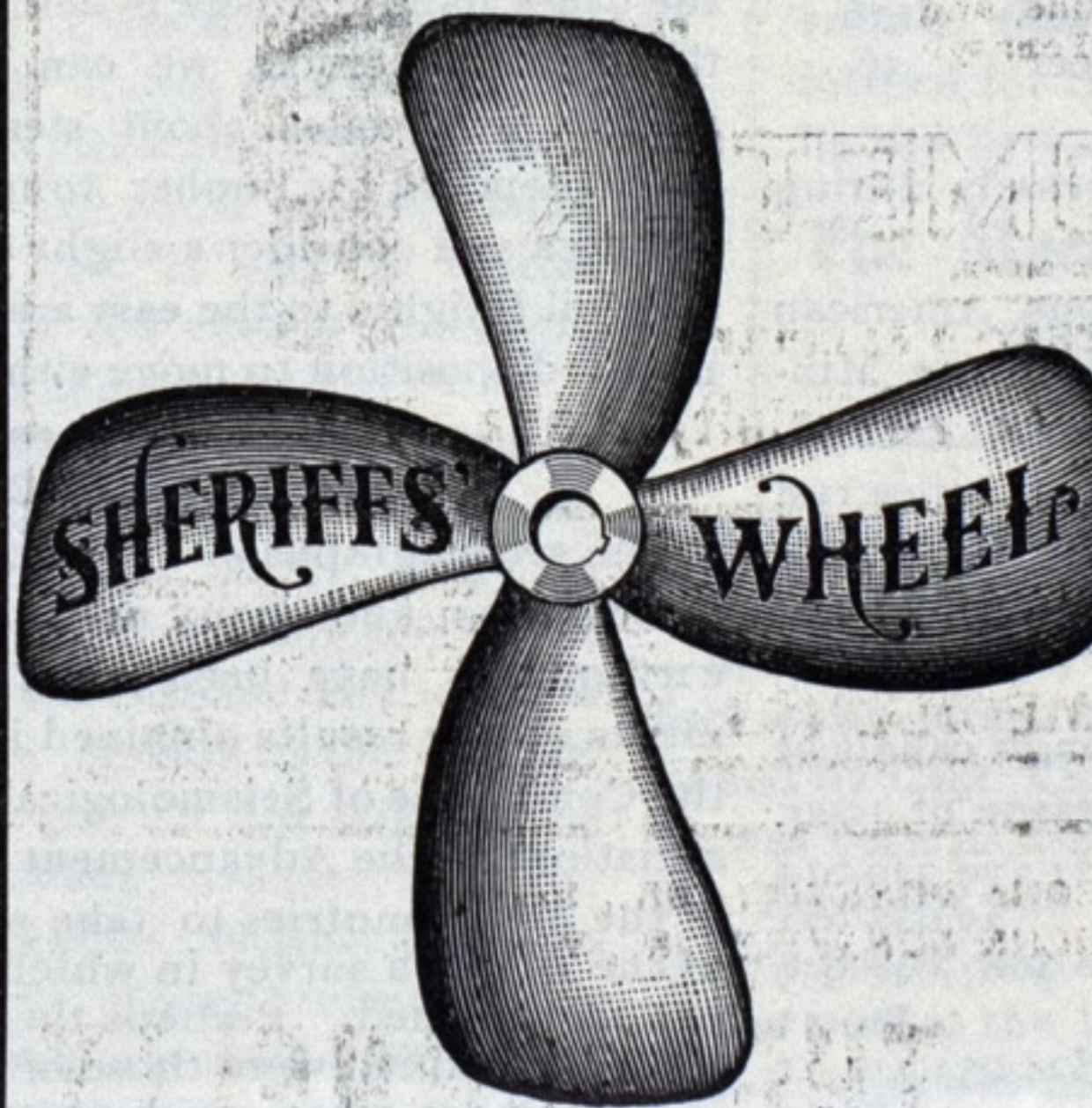
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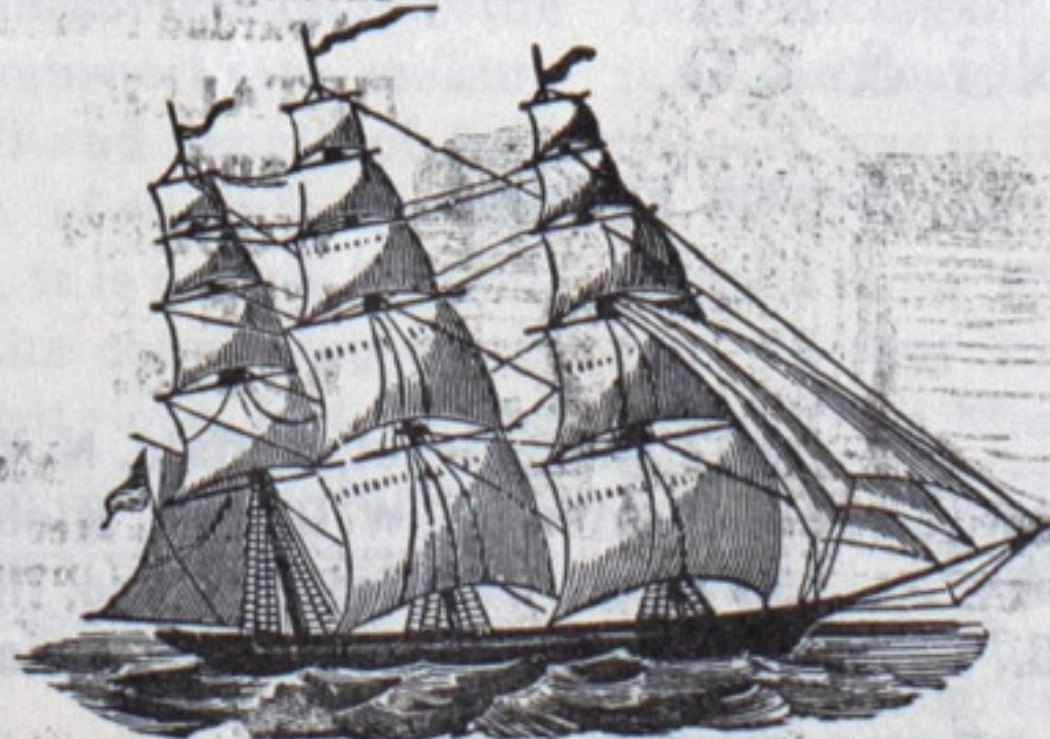
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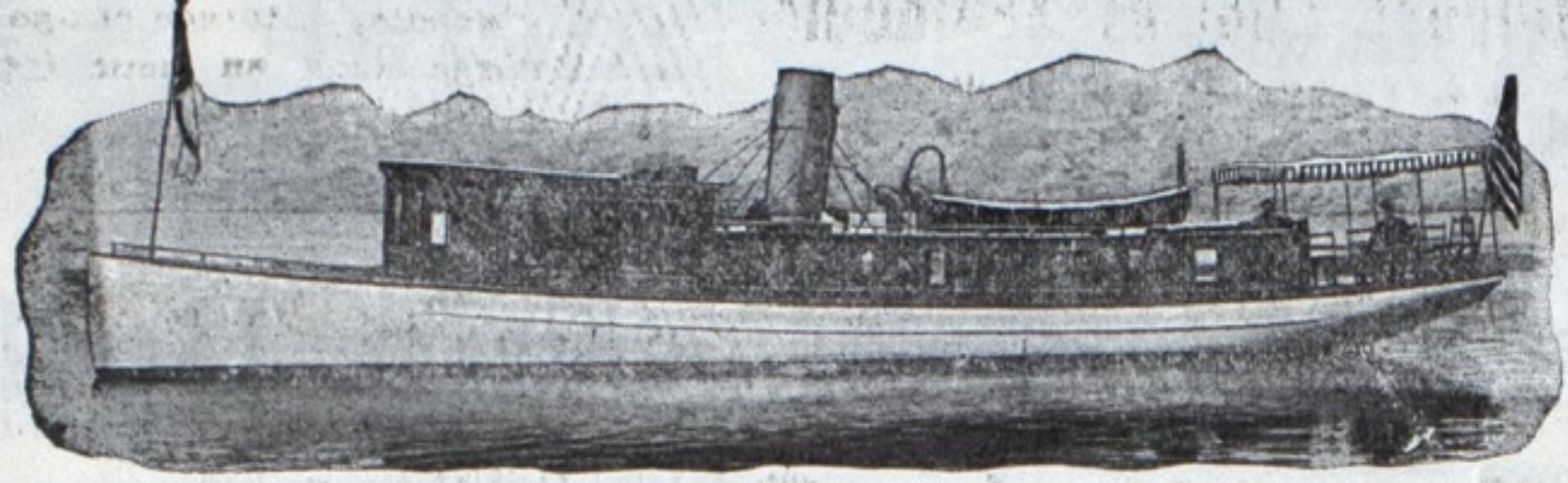
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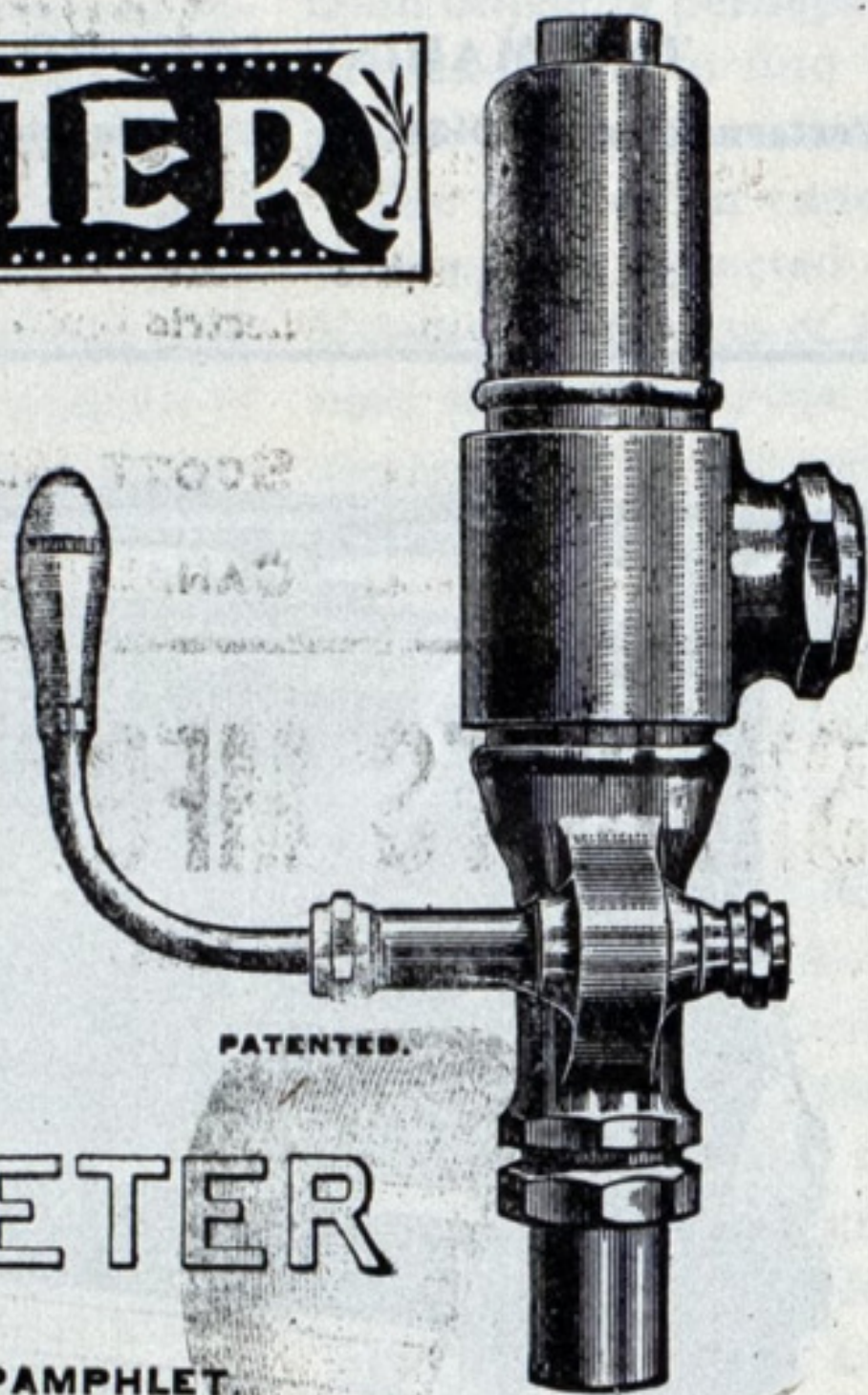
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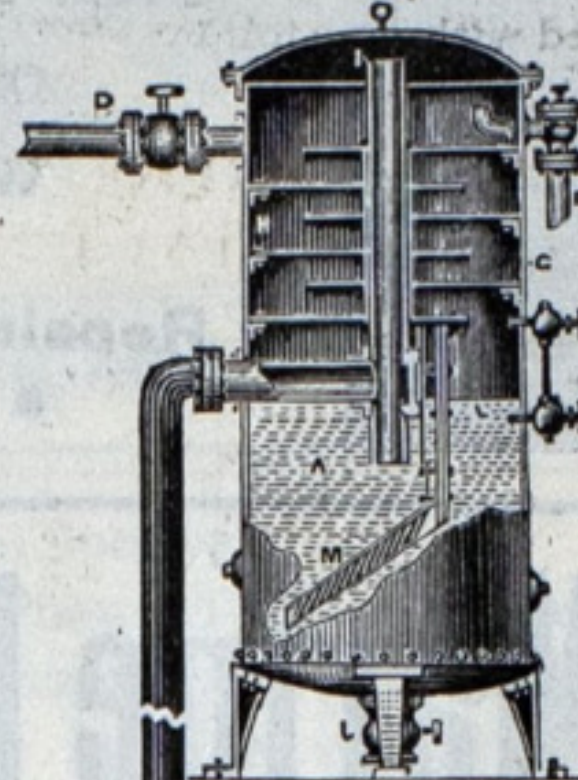
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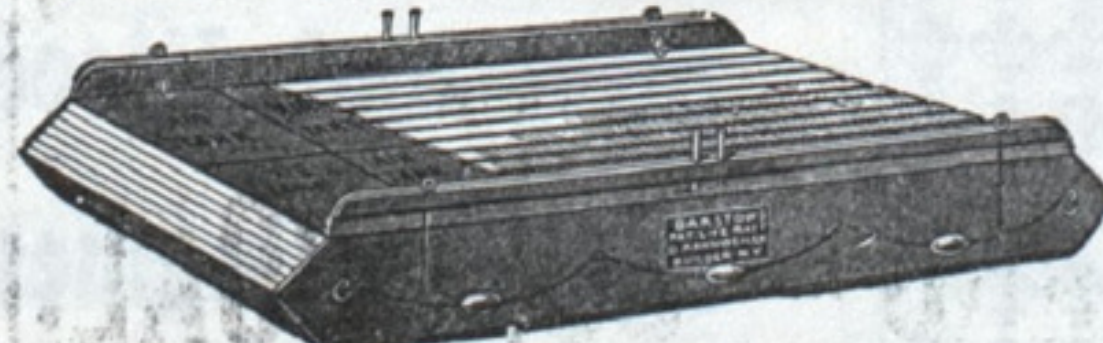
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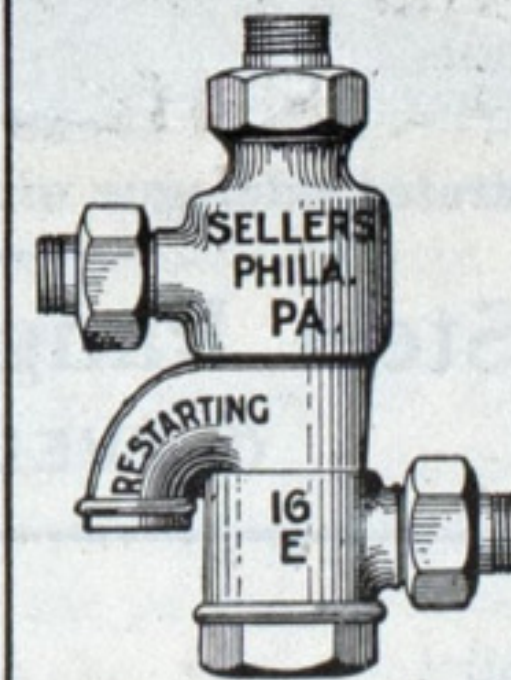


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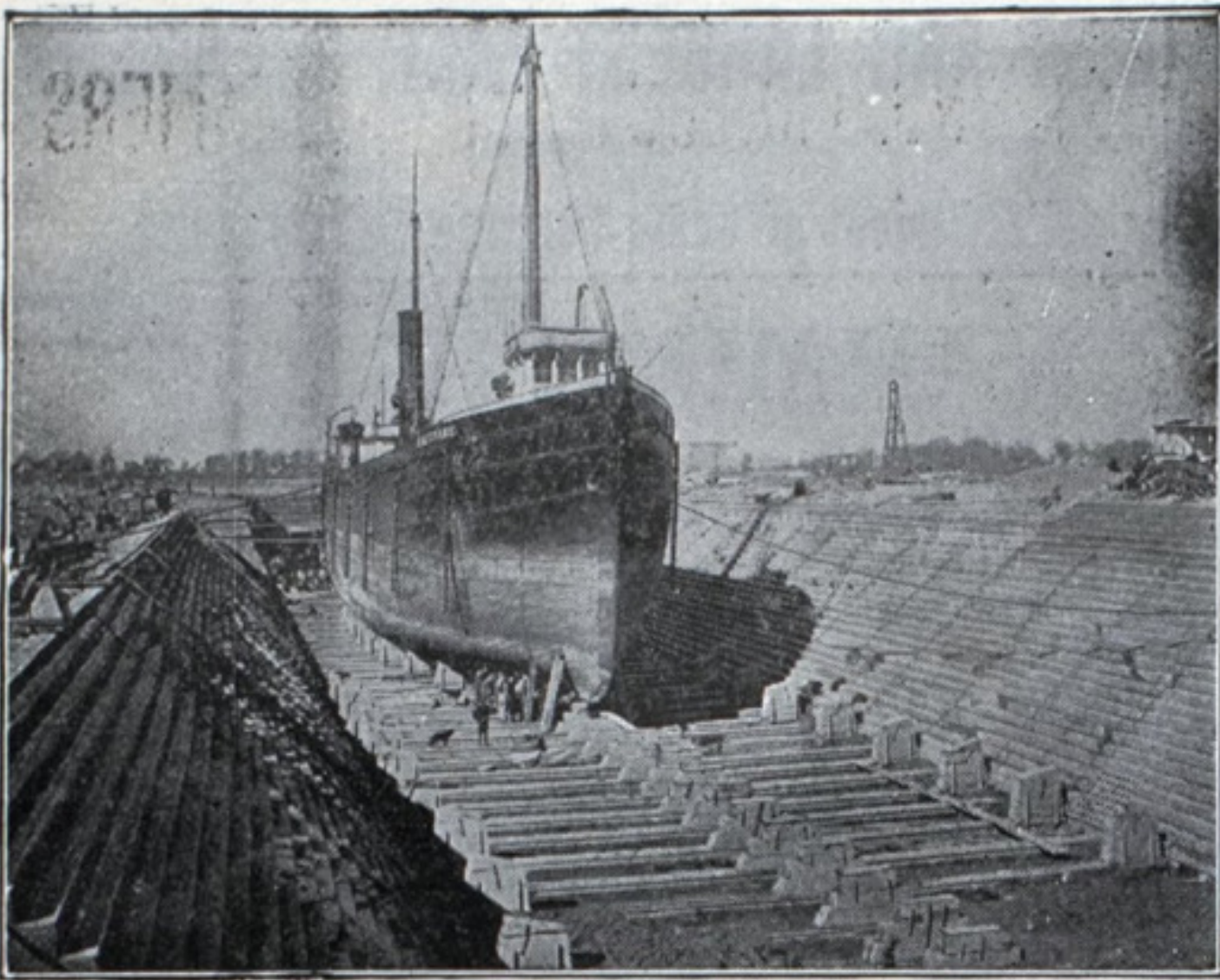
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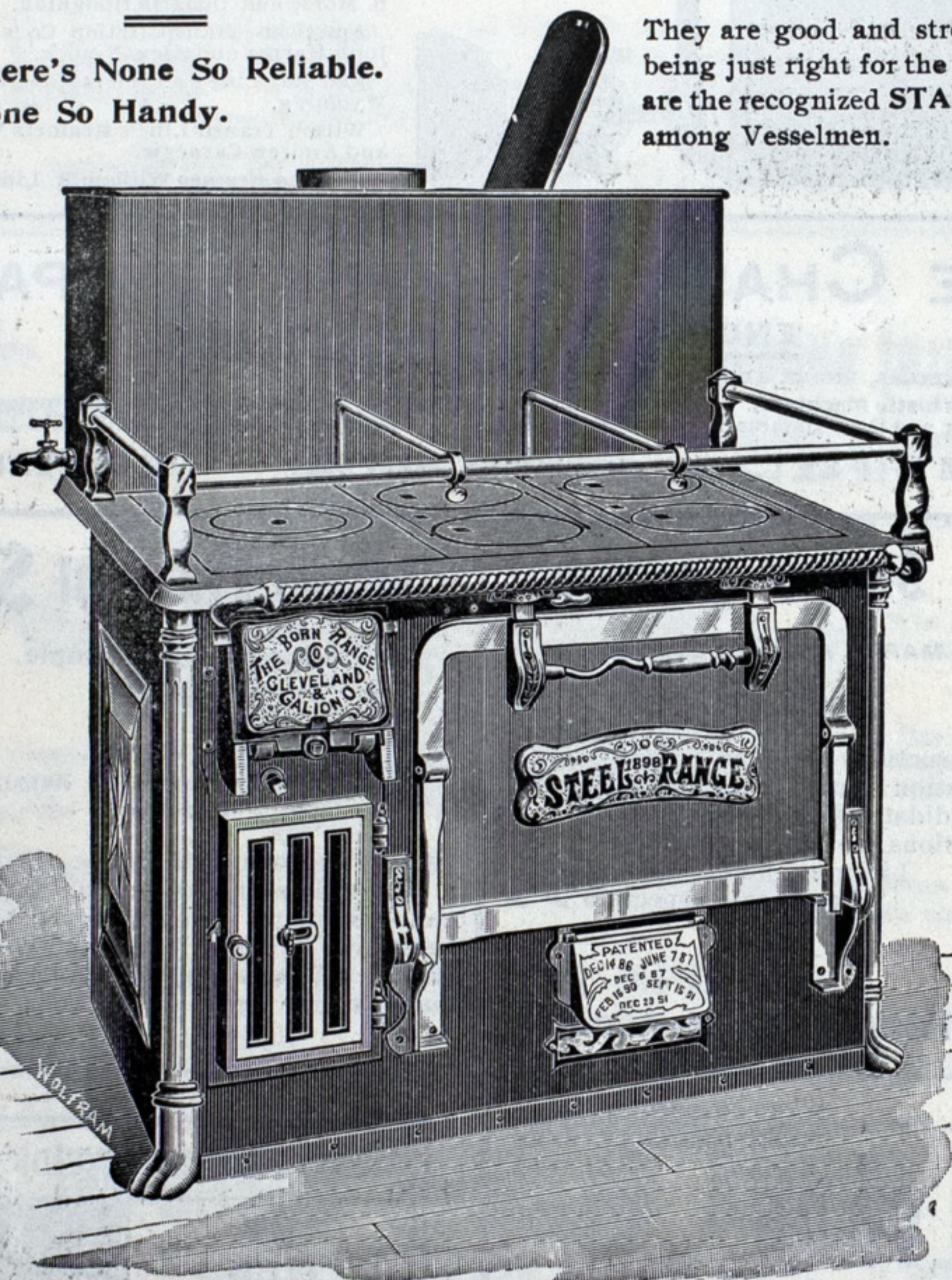
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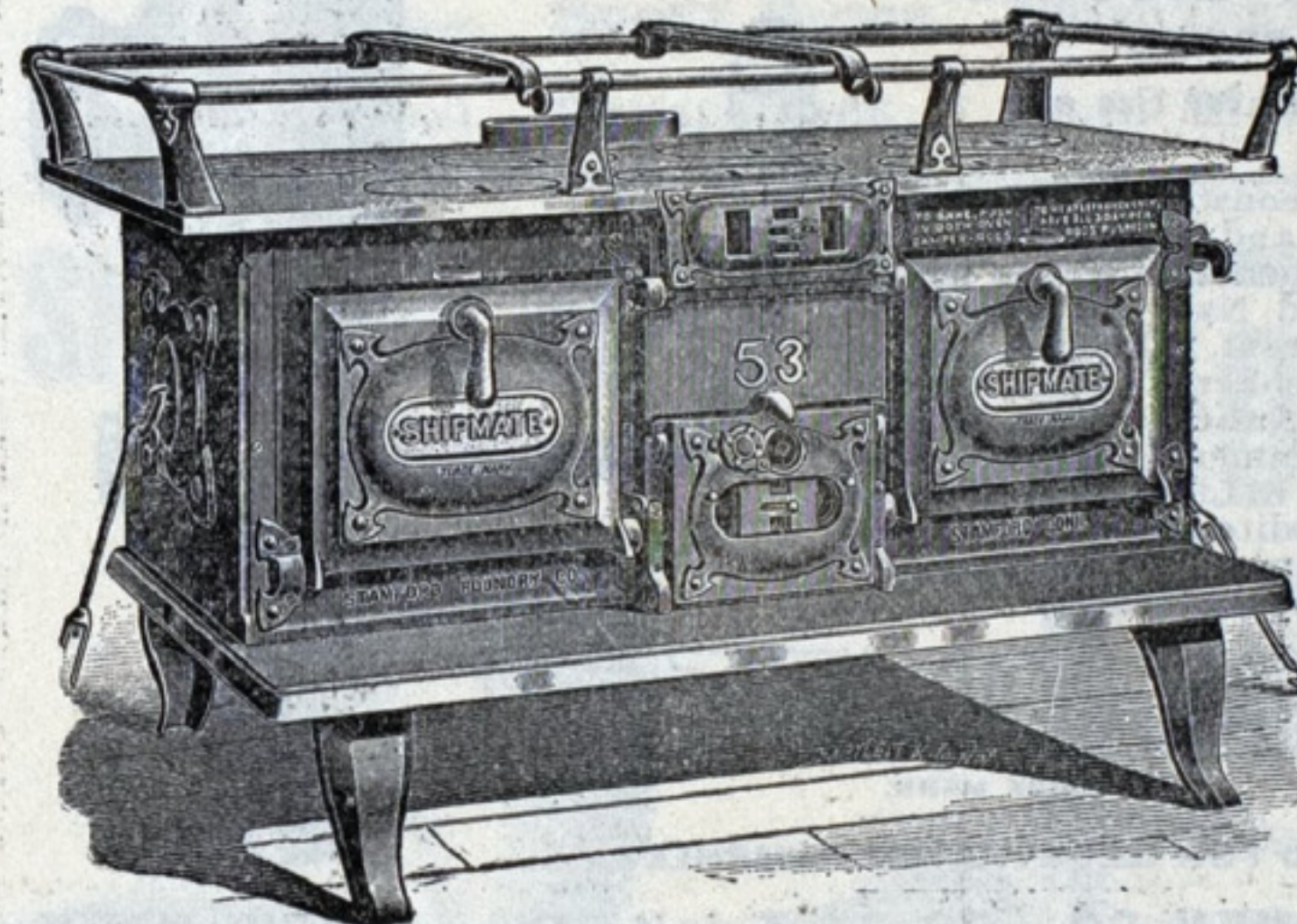
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